National Library
of Canada

Canadian Theses Service

Ottawa, Canada
K1A 0N4

Bibliothèque nationale
du Canada

Service des thèses canadiennes

The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.

L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

ISBN 0-315-55445-2

Canada

THE UNIVERSITY OF ALBERTA

SCREENING AND ASSESSMENT FOR DEVELOPMENTAL AND LEARNING DELAYS AMONG YOUNG SCHOOL-AGE CHILDREN IN TANZANIA

by

AKUNDAELI SAFARI MBISE

(C)

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

IN

EDUCATIONAL PSYCHOLOGY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

FALL, 1989

THE UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR: Akundaeli Safari Mbise

TITLE OF THESIS: Screening and Assessment for Developmental and Learning Delays Among Young School-age Children in Tanzania

DEGREE FOR WHICH THESIS WAS PRESENTED: Doctor of Philosophy

YEAR THIS DEGREE GRANTED: 1989

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

AMbise
Student's Signature

Faculty of Education
(Student's permanent address)
University of Dar es Salaam
Box 35048 Dar es Salaam
Tanzania

Date: 11th October, 1989

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Screening and Assessment for Developmental and Learning Delays Among Young School-age Children in Tanzania, submitted by Akundaeli Safari Mbise in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Educational Psychology.

Supervisor

L. Stewin

James Blakey

Date: 14/9/89

ABSTRACT

Developmental screening and assessment of preschool and school children in Tanzania should be an integral part of childhood services. Research on early childhood education and stimulation in the family has indicated that children's development and learning can be enhanced and handicapping conditions can be prevented. One area of great concern has been the importance of the family environment in early childhood development and learning, especially the role played by various family processes and interactions.

The present study attempted to explore the developmental characteristics of young school-age children and the characteristics of their home environment in Tanzania. The intention was to identify children's developmental strengths and symptoms of possible developmental problems. The home environment was analyzed for factors enhancing or inhibiting children's development and learning.

The five questions which guided the study sought to identify children's current developmental and functional characteristics, family provisions supporting children's development, whether the MPI and the HOME inventories differentiated children's developmental functioning, and the characteristics of the home environment, whether the MPI and the HOME were ecologically appropriate for screening and assessing children in Tanzania; and the extent to which the family helped children to develop school related skills.

To address this problem, a cross-sectional design was employed to study 100 five and six year old children with mean ages of 59.2 months and 73.2 months, respectively, from five city locations in Dar-es-Salaam. Children's parents (100) provided information on (children's) developmental characteristics and functioning as represented in the MPI. The HOME was administered to parents to explore the characteristics of the home environment.

Children's knowledge of language, quantitative reasoning and memory functioning was assessed with selected items from the Binet Form IV version for preschool children. Three scores were obtained from each child and two inventory-based scores were obtained from parents. Interviews were conducted on 20 parents to validate the appropriateness of the items on the inventories.

The independent variables in the study were centre, sex and age. The dependent variables included the eleven developmental and problem subscales of the MPI and the eight HOME subscales. Results from the MPI, the HOME subscales, and the three cognitive tests were analyzed for

means, standard deviations and tested for statistical significance. Graphic presentation was employed for MPI results to provide visual contrast of children's developmental characteristics.

Results from the MPI supported by parent interviews indicated that the five and six year old children were developmentally normal and functioning efficiently in the family. Results from the interviews revealed that parents understood their children's developmental abilities and could detect developmental and behaviour problems. The family environment provided children with variety of stimulation, but some constraints limited various aspects of environmental stimulation thus affecting children's acquisition of some skills adversely.

The results further indicated that most items on the MPI and a few items on the HOME were ecologically appropriate, however they required insight into cultural interpretations of developmental characteristics and behaviour. It was suggested that further research with the inventories is required before ecological and construct validity could be established.

Dedication

To:

My parents, Sara and Safari
Through determination and struggle they braved the horizon beyond the village cosmos --
in search of posterity's future.

My wife, Ndemanyiswa
and children, Elikaanai, Amani and Abraham
For enduring and suffering my long absence with courage and determination.
All, in anticipation of brighter tomorrows.

Tanzanian children
The study is about them and for them.
Their future is balanced between parental decision and action.

ACKNOWLEDGEMENTS

The success of this thesis is a result of the contributions received from many individuals, groups and institutions. I am grateful to the University of Dar-es-Salaam for granting me three years study leave, for financial support, and for supporting my family during leave of absence. My appreciation goes to the Institutional Cooperation Development Services of CIDA for the three-year support administered through CIED Faculty of Education, University of Alberta, FSIDA and the IDRC for supporting activities related to the preparation of the thesis. I wish to thank the Faculty of Graduate Studies and Research and the International Student Centre for grants which enabled me to attend and present papers at several international workshops and conferences.

Specific individuals have contributed generously to the success of this work at various stages. I would now like to thank them for their support and guidance which has been invaluable. My thanks go to Dr. Kysela for guiding this project from the proposal stage to the final product. His advice and support enabled me to attend several conferences which expanded my contacts with psychology experts and broadened my experiences.

I am thankful to the other members of the supervisory committee, Dr. Stewin and Dr. Blakey, for their encouragement and confidence throughout my stay at the University of Alberta. Thanks to Dr. Baine for the thorough reading of this work, and specifically for the advice received during the results presentation process. This final product owes a great deal to their thoughtful comments and suggestions. I am thankful to Dr. Fitzsimmons for both moral advice and material support in time of need.

The five nursery school teachers, Lyakurwa, Mongi, Habiba, Palangyo and Akida, and the parents spent many hours collecting and providing data for this study. Their contribution is greatly appreciated. Thanks also go to the children from the five nursery schools for their lively interactions which made my knowledge of child psychology a living experience.

My thanks are also due to Mboya, Njeri, for their assistance in data coding, Mlekwa and Kalafunja, for sustained companionship and support. My wife Ndema and children Elikaanai, Amani and Abraham: "Where is our position in your life?" I thank them for challenging the altar of academics. Special thanks go to my wife for the great care of our children and our aging parents. And finally, thanks to my parents Safari and Sara, for their foresight. Thanks to Joanna Lubberts for careful typing and editing of this work.

TABLE OF CONTENTS

Chapter page

I INTRODUCTION 1

The Context for Developmental Screening and Assessment in Tanzania 1

Ignorance, Disease and Poverty 1

The Problem 4

Screening and Assessment for Preventing Early School Failure 6

Childhood Development Studies and Their Limitations 9

The Purpose of Child Developmental and Learning Assessment in Tanzania 11

Short-term Benefits 12

Long-term Benefits 13

Purpose of the Study 15

Objectives of the Study 15

Delimitations and Limitations of the Study ... 17

Delimitatons 17

Limitations 18

II LITERATURE REVIEW 20

Introduction 20

Literature Review Plan 22

Chapter page

Research on the Influences of Home Status and Process Variables on Early Childhood Development and Learning 24

  Home Process Variables 25

Normal Development and Developmental Delays 30

  Adults' Response to Development During Middle Childhood 31

Developmental Delays 33

  Characteristics of Developmentally Delayed Children 34

  Identification of Children at Risk for Developmental and Learning Problems 36

Effect of the Home Environment on the Development of Quantitative Reasoning, Language and Memory Functioning in Preschool Children 39

  Development of Quantitative Reasoning and Children's Home Environment 40

  Research on Children's Language Development and the Home Environment 44

  Children's Memory Functioning and the Home Environment 47

The Tanzanian Home Environment: Its Influence on Early Childhood Development and Learning 51

Constraints on Effective Parental and Institutional Participation in Early Childhood Development During Preschool Years 59

Methods for Screening and Assessing Developmental Delays and Potential Learning Problems 62

  Theoretical Bases of Screening Process and Instruments 62

Chapter page

Rationale for Selection of the MPI and the HOME for Tanzania 65

The Minnesota Preschool Inventory (MPI) 65

Rationale for the Minnesota Preschool Inventory (MPI) 68

The Home Observation for the Measurement of Environment (HOME) by Caldwell and Bradley (1979) 70

Rationale for the HOME Inventory 72

Problems Encountered in Modification and Adoption of the MPI and the HOME for Tanzania 73

Underlying Theoretical Assumptions 73

Summary 75

III RATIONALE AND RESEARCH QUESTIONS 80

Introduction 80

Definition of Concepts and Theoretical Framework 81

Definition of Concepts 81

Issues and Relationships of Variables in the Study 84

Theoretical Framework 91

Research Questions 97

IV METHODOLOGY 100

Introduction 100

Description of Preschool Centres, Family Characteristics and Participants 102

Characteristics of the Nursery School and Organization 102

Chapter page

The Nursery School Day in Tanzania 103

Selection of Preschool Centres 105

Environment of the Selected Preschool Centres 109

Participants: Families and Children 110

Characteristics of Families 110

Children 115

The Sample 117

Preparation of Research Materials 119

Adaptation of Psychological Instruments from One Culture to Another: Issues for Consideration 119

Selection and Preparation of Materials 122

Reliability and Validity of the MPI and the HOME 125

Reliability and Validity of the MPI 125

Reliability and Validity of the HOME 126

Reliability of the Kiswahili Versions of the MPI and the HOME 129

Design 131

Cross-sectional Design 131

Validity of the Study 135

Internal Validity 137

External Validity 141

Procedures 145

Language 145

Training of Teachers 146

Chapter page

Qualitative Information 150
Administration of the Inventories 151
The HOME 151
Administration of Tests 153
Vocabulary Test 154
Quantitative Reasoning 155
Bead Memory 156
Data Analysis 156
Quantitative Data 157
Qualitative Data 158

V RESULTS 160
Format for the Presentation of Results 162
Question 1 162
Problem Symptom Subscales 189
Question 2 201
Vocabulary, Quantitative Reasoning and Memory Test Results 221
Summary of the Results for the MPI, the HOME and the Tests 230
Question 3 230
Question 4 236
Interviews with Parents 244
Question 5 248
Language Stimulation 249
Stimulation of Quantitative Reasoning 250

Chapter page

Stimulation of Reading and Writing Skills 251

VI DISCUSSION, IMPLICATIONS AND CONCLUSIONS 254

Introduction 254

Children's Development Characteristics and Functioning 255

Family Provisions Supporting Child Development 260

Special Needs and Developmental Delays 264

Home/School Influences 269

Ecological Validity Issues 273

Clinical and Research Implications 276

Clinical Implications 276

Research Implications 278

Summary 280

Conclusion 283

BIBLIOGRAPHY 286

APPENDICES: A. The Minnesota Preschool Inventory 299

B: Home Observation for Measurement of the Environment 306

C. Picture Vocabulary 311

D. Quantitative Reasoning 313

E. Memory Test 315

F. Ujuzi Wa Wazazi Kuhusu Makuzi Ya Watoto 319

LIST OF TABLES

Table page

4.1 Population of Preschool Children by Age and Sex in the Five Nursery Schools 106

4.2 Parental Education by Centre and Sex, Profession Category and Income 114

4.3 Mean Ages for Five and Six Year old Children by Centre and Sex 118

4.4 Results of 10-Family Reliability Study for the MPI and the HOME by Various Subscales 132

4.5 Summary of Study Design: The Sample and the Instruments 134

5.1 Self Help: Mean Scores by Centre, Age and Sex 164

5.2 Fine Motor: Mean Scores by Centre, Age and Sex 167

5.3 Expressive Language: Mean Scores by Centre, Age and Sex 171

5.4 Comprehension: Mean Scores by Centre, Age and Sex 174

5.5 Memory: Mean Scores by Centre, Age and Sex 177

5.6 Letter Recognition: Mean Scores by Centre, Age and Sex 180

5.7 Number Comprehension: Mean Scores by Centre, Age and Sex 184

5.8 Immaturity: Mean Scores by Centre, Age and Sex 190

5.9 Hyperactivity: Mean Scores by Centre, Age and Sex 193

Table page

5.10 Behaviour Problems: Mean Scores by Centre, Age and Sex 195

5.11 Emotional Problems: Mean Scores by Centre, Age and Sex 198

5.12 Stimulation Through Toys, Games and Reading Materials (TGM): Means and Standard Deviations by Centre, Age and Sex 202

5.13 Language Stimulation: Means and Standard Deviations by Centre, Age and Sex 205

5.14 Physical Environment: Safe, Clean and Conducive to Development: Means and Standard Deviations by Centre, Age and Sex ... 208

5.15 Pride, Affection and Warmth (PAW): Means and Standard Deviations by Centre, Age and Sex 210

5.16 Stimulation of Academic Behaviour (SAB): Means and Standard Deviations by Centre, Age and Sex 212

5.17 Modelling and Encouragement of Social Maturity (MSM): Means and Standard Deviations by Centre, Age and Sex 214

5.18 Variety of Stimulation (VAS): Means and Standard Deviations by Centre, Age and Sex ... 216

5.19 Summary of Scheffe Test of Statistically Significant Mean Differences between the Five Nursery School Centres on HOME Subscales 219

5.20 Vocabulary: Mean Scores by Centre, Age and Sex 222

5.21 Quantitative Reasoning: Mean Scores by Centre, Age and Sex 224

5.22 Memory Functioning: Mean Scores by Centre, Age and Sex 226

Table page

5.23 Vocabulary, Quantitative Reasoning and Memory Tests Multivariate Analysis, Wilk's Lambda: Centre 228

5.24 Vocabulary, Quantitative Reasoning and Memory Tests Multivariate Analysis, Wilk's Lambda: Age (yr.) 228

5.25 Vocabulary, Quantitative Reasoning and Memory Tests Multivariate Analysis, Wilk's Lambda: Centre/Sex/Age (yr.) 229

5.26 Significant F-Values for MPI Multivariate Analysis, Wilk's Lambda (Main Effects and Interaction Effects): Centre 232

5.27 Significant F-Values for MPI Multivariate Analysis, Wilk's Lambda (Main Effects and Interaction Effects): Age (yr.) 233

5.28 Summary of Scheffe Test of Statistically Significant Mean Differences between the Five Nursery School Centres on MPI Subscales 235

5.29a Definitions of Variables 239

5.29b Correlation Matrix for MPI, the HOME and the Vocabulary, Quantitative Reasoning and Memory Tests 240

5.30 Parental Understanding and Concerns for Children's Development and Behaviour 246

LIST OF FIGURES

Figure page

5.1 Self Help: Mean Scores by Centre, Age and Sex 165

5.2 Fine Motor: Mean Scores by Centre, Age and Sex 168

5.3 Expressive Language: Mean Scores by Centre, Age and Sex 172

5.4 Comprehension: Mean Scores by Centre, Age and Sex 175

5.5 Memory: Mean Scores by Centre, Age and Sex 178

5.6 Letter Recognition: Mean Scores by Centre, Age and Sex 181

5.7 Number Comprehension: Mean Scores by Centre, Age and Sex 185

5.8 Immaturity: Mean Scores by Centre, Age and Sex 191

5.9 Hyperactivity: Mean Scores by Centre, Age and Sex 194

5.10 Behaviour Problems: Mean Scores by Centre, Age and Sex 196

5.11 Emotional Problems: Mean Scores by Centre, Age and Sex 199

5.12 Vocabulary: Mean Scores by Centre, Age and Sex 223

5.13 Quantitative Reasoning: Mean Scores by Centre, Age and Sex 225

5.14 Memory Functioning: Mean Scores by Centre, Age and Sex 227

LIST OF ABBREVIATIONS

Abbreviation	
AAMD	American Association on Mental Deficiency
CAMR	Canadian Association for the Mentally Retarded
CCM	Chama Cha Mapanduzi (the Political Party of Tanzania)
HOME	Home Observation for the Measurement of the Environment
IYC	International Year of the Child
MPI	The Minnesota Preschool Inventory
MTUU	Mpango wa Tanzania UNESCO/UNICEF
TYC	Tanzania Year of the Child
URT/ UNICEF	United Republic of Tanzania/UNICEF
UAE	Universal Adult Education
UPE	Universal Primary Education

CHAPTER I

INTRODUCTION

The Context for Developmental Screening and Assessment in Tanzania

Ignorance, Disease and Poverty

The necessity and significance of screening and assessment of developmental and learning delays among school-age children in Tanzania should be considered in the context of the socio-economic, cultural and psychological developments since independence. Consistent attempts were made to re-orient the new nation from its colonial past to an independent future. Identification of ignorance, disease and poverty as the three great enemies of national and individual freedoms determined developmental priorities. Ignorance had to be fought through education of the adults, consequently the declaration of Universal Adult Education in 1970 and, for children, Universal Primary Education (Tanganyika African National Union [TANU, 1974]).

Systematic educational campaigns were conducted to stimulate active involvement of both adults and children in raising the quality of life, fighting ignorance through concerted efforts at educating oneself and others (Hinzen & Hundsdörfer, 1983), and combating disease through hygienic living habits and attendance to hospital treatment, as well as through improved nutrition. Poverty had to be fought through hard work and diligent sense of responsibility (TANU-Arusha Declaration, 1967). Education at all levels of society was thus considered the key for both personal and national development, a tool for liberation (Freire, 1972; Nyerere, 1967, 1974).

The overall outcome of the efforts to overcome ignorance, disease and poverty was a significant expansion and improvement in the quality of education at primary, secondary and university levels, coupled with adult education for the non-school adult population (Ministry of Education, 1984). Improvements in the economy created facilities for better health care, nutrition, hygiene, education, and better child care. The totality of these improvements was realized in increased life-expectancy for young children and adults alike, increased value and demand for educational opportunities for children, changing cultural norms leading to higher expectations, and subsequently, changing lifestyles. The need for more complex skills to cope with life in a rapidly changing society, especially for handicapped persons, was critical (Heron & Otaala, 1982).

Therefore, the rationale for developmental screening and assessment for young school-age children in Tanzania today reflects the success attained through improved education, health, economy and change in traditional cultural values and attitudes (Chama cha Mapinduzi [CCM], 1987; Wassao, 1977). The need to provide quality education, health and opportunity for developing people's potential in a society with limited resources demands that both human and material/financial resources be utilized as effectively and efficiently as possible to benefit everyone (Nyerere, 1967; United Republic of Tanzania [URT] & UNICEF, 1985). There is currently an increased awareness among the Tanzanian society for the importance of promoting and providing early childhood stimulation and special services to cater for all children, normal and the handicapped. The activities of the International Year of the Child [IYC] declared in 1979 and those of the Tanzania Year of the Child [TYC] declared in 1980 have specifically focused on the status of children and the provision of various services in the community.

The Problem

The necessity for developmental screening and assessment can thus be explained by: (a) the need to make effective use of scarce resources; (b) the increased life expectancy of children at risk for handicapping conditions; (c) increased demand for education, leading to universal primary education and subsequent large classes with limited teaching/learning resources; (d) enrolment of students with handicapping conditions in regular classrooms, without supporting services (Omari, Mbise, Mahenge & Malekela, 1983); (e) lack of home to school transitional preparation (Mbilinyi, 1984); (f) need for basic information for stimulating early childhood development and learning at the family, day-care, preschool and school levels (CCM, 1987; UNICEF, 1979); and (g) the need for early identification and intervention for children with developmental delays and potential learning problems (Institute of Education, 1984; Ministry of Education, 1984).

Provision of optimal services for normal and handicapped children enhances stimulation of early childhood development and learning and provides basic information for developing early childhood intervention (Marfo & Walker, 1986; Salva & Ysseldyke, 1985; Strangler, Huber & Routh, 1980). Screening and assessment establishes the incidence of children with handicapping conditions in a population and their special needs (Curan, 1984). For developing countries, developmental screening and assessment provides a major means of establishing systematic child development information based on normal characteristics, developmental delays and potential learning problems in childhood (Fryers, 1985; Kysela & Marfo, 1984).

Screening and assessment examine children's developmental progress at various ages to establish developmental norms and irregularities. Through screening and assessment, developmental strengths and learning potentials, delays and learning problems are scrutinized in relation to developmental milestones and tasks (Salvia & Ysseldyke, 1985). Knowledge of children's developmental milestones and problems in a particular cultural environment is beneficial to parents, early preschool child care and school personnel in their endeavour to guide early childhood development and learning.

For Tanzania, aspiring to promote equality of educational opportunity and related services for all children, developmental screening and assessment become a logical starting point for establishing the incidence and magnitude of children with special needs and problems at home and in school. The information gained from developmental screening will facilitate preparation of early childhood stimulation and intervention programs intended for both normal and handicapped children.

Screening and Assessment for Preventing Early School Failure

Early childhood development and education programs were expected to solve two problems: (a) to lay a good early childhood development foundation, and (b) to minimize early school failures and premature drop outs. King and Myers (1983) attribute early school failure and premature drop-out in developing countries to three main factors. First, the strangeness of the Grade 1 atmosphere makes school learning for many children a difficult and hostile experience, especially for those lacking organized formal learning experiences at home. Many children come to school without exposure to books, drawing experiences, structured work habits or fluency in the language of school instruction.

At school, the teachers are burdened with large classes; thus, consciously or unconsciously, they fail to understand and attend to problems of slow learners or unmotivated children (Omari, Mbise, Mahenge, Malekela & Besha, 1983). Due to a lack of encouragement from the home, lack of supportive teachers and minimal availability of facilitative learning materials, children with learning problems must either repeat classes at the end of the year or drop out of school completely.

The Tanzanian government explored possibilities for enhancing a smooth transition between home and school learning by encouraging families to cooperate with teachers at various levels. Preschool children were to be accorded services to stimulate general development and the acquisition of school readiness skills (MTUU, 1985).

For children already in school, both preventive and remedial measures involving teachers and students were taken to ensure success in learning. The remedial and interventional measures targeted children experiencing mild learning difficulties. There was little adjustment made to the school curriculum or to teacher preparation to help the handicapped child to succeed in the regular classroom (Mbise, Mahenge & Omari, 1984). Workshops, seminars and in-service courses were organized for mathematics and language teachers for Grades 1 and 2.

Failing children were allowed to repeat the year (the practice had been abolished in previous years). Promotion to the next grade depended on attaining a required mastery level at the end-of-year performance examinations. Teachers were encouraged to practice continuous assessment and keep regular records of pupils' progress and learning problems (TANU, 1974). More attention was supposed to be given to children experiencing special learning difficulties, but the large class sizes and the teachers' lack of special skills made implementation practically impossible (Mwanjombe, 1977).

Improvements in teacher quality appear to be the short- and long-term strategies to the problem, but there is need to consider children's home background experiences prior to school entry. Children formally start primary education at age seven, an age when enduring social, physical, intellectual and emotional skills have already been established. Evidence from research on early childhood development and education (Anselmo, 1987; Scarr, Wienberg & Levine, 1986) shows that the foundation for school learning, achievement and general personality development is laid in the family during the preschool years; the importance of parental and early child care personnel involvement cannot be overlooked.

The various governmental pronouncements (CCM, 1987; Ministry of Social Welfare, 1982) stressed the role of parents and early child care personnel in material, psychological and educational contribution toward children's success in school learning. Parents, preschool experts and school teachers were encouraged to provide the necessary guidance to stimulate overall child development and learning during the preschool years (Héron & Otaala, 1982; UNICEF, 1979; Wassao, 1977). Considering the quantity and quality of systematic information and skills available on child development and learning based on the Tanzanian socio-cultural environment, parents and early child care personnel were unprepared for effective discharge of innovative child rearing responsibilities. Most early childhood development and education services were based on Western developmental principles and materials, both of which are unavailable to the majority of Tanzanians.

Childhood Development Studies and Their Limitations

Despite the many advances that Tanzania has made in promoting children's well-being and services, systematic research in early childhood development and education has been minimal. Existing studies on child development, education, needs and problems are mainly based on general surveys (Kambalia, 1974; Kisanji, 1979; Omari, 1977; UNICEF, 1979). Lack of controls in sample selection, few standardized instruments, and variability across settings make internal and external validity questionable. None of the studies completed follow-up surveys to establish long-term reliability and predictive validity of the results. Subsequently, the studies have little impact on furthering scientific understanding of children's needs, problems and subsequent program development in the Tanzanian context.

These surveys have, however, highlighted the general situation and needs of children, particularly in health, education and scarcity of children's educational materials (UNICEF, 1979; URT & UNICEF, 1985; Wassao, 1977). The studies also highlight the constraints on child-adult interactions and cooperation (Bwatwa, 1979; Mbilinyi, 1984). General lack of structured home learning activities, time management, limited availability of play materials and lack of readiness preparation for school learning has been observed (Mahenge, 1979; Omari et al., 1983). The family environment, though rich in social stimulation and cooperation (Whiting & Edwards, 1988) was generally lacking in intellectual stimulation activities related to school functioning.

None of the studies, however, examined the specific developmental and learning characteristics of young children in the home or school environment. Such information is vital for understanding children's developmental and functional characteristics, and the problems which children experience as they grow and learn in the Tanzanian environment.

Due to the lack of replication, consistency of instruments, and control in sample selection, the studies have produced limited stable research techniques for studying child development and learning. Screening for learning difficulties among school children is currently based on teachers' general observations and on children's general performance in the classroom (Kisanji, 1979). The unstandardized instruments currently being used for screening severe cases of handicapping conditions tend to give crude information which is generally difficult to employ in program development for children.

Currently, there is increased societal awareness of children as a distinct group with special characteristics, needs and problems. Subsequent recognition and understanding of the importance of providing for early childhood development and learning is affecting rearing practices (CCM, 1987; UNICEF, 1979). In addition to special recognition of the status of children, the government and the ruling party are attempting to promote a systematic and scientific approach to children's services through public education and research (URT & UNICEF, 1985; Wassao, 1977). The new approaches to child care are intended to complement traditional rearing practices which face serious challenges (Héron & Otaala, 1982). To enable children to cope with complex needs in a modern and rapidly changing society, it is imperative that parents and child-care institutions cooperate closely in child upbringing (CCM, 1987; Otaala, 1982).

The Purpose of Child Developmental and Learning Assessment in Tanzania

The importance of developmental screening and assessment in Tanzania can be conceived in terms of short- and long-term outcomes. Both outcomes are preceded by the need to create systematic, child development information, principles and research methodology appropriate to the culture. The ultimate objective is to make such information and methodology readily accessible to persons dealing with early childhood service promotion. Such information can then be used in the screening and assessment of young preschool and school children which is important as a means of identifying the incidence of children in need of special services. Presently, the creation of developmental norms for determining normal and delayed development and potential learning problems constitutes a major concern for developmental screening and assessment research.

Short-term Benefits

The short-term benefits are: first, to establish among children developmental norms from which parents and teachers can compare children's progress in development and learning (Thain, Casto & Peterson, 1980); second, to facilitate identification of developmental abnormalities in children's progress and thus determine the eventual need and development of appropriate intervention approaches involving both the parents and the teachers (Fobih, 1983); third, to provide the basis on which better intervention and remedial services can be developed by improving existing services and initiating new preschool programs; and fourth, preschool and school assessment of children can also enhance the parents', teachers' and care-providers' knowledge of the child's skills and needs in the various environments of Tanzanian culture (URT & UNICEF, 1985).

The assumption here is that better knowledge by child care personnel of specific developmental characteristics as children grow, learn and function in the everyday Tanzanian environment will facilitate informed child care and direction. Through such knowledge parents and teachers could evaluate children's potentials and programs more realistically, thus regulate their expectations of what children could attain in school and in life (Cox, 1987; Salva & Ysseldyke, 1985; Winzer, 1987).

Long-term Benefits

Preschool and school assessment of developmental and learning progress may be used to arrest the would-be school failures. First, through family, preschool and school intervention programs, chances of children lagging behind in school learning due to controllable environmental factors would be minimized (Salva & Ysseldyke, 1985; Westling, 1986).

Second, from preschool and school assessment, children with serious problems would be recognized and accorded the necessary attention in the early years of development and school learning (Marfo, Walker & Bernard, 1986). Indirectly, children would receive sufficient attention and opportunity to promote fuller development and learning potentials within the limits of their environment and personal resources (Baine, 1988; Bralic, 1983; Winzer & Rogow, 1987).

Third, the overall long-term social and economic goals of school-age child developmental and learning assessment are to facilitate planning of steady enrichment and intervention programs for preschool and school children. These programs would reduce the number of future citizens demanding adult education in the basic skills of functional literacy, numeracy and language, as well as attitudinal skills (Ministry of Education, 1984; Mbise, 1986).

Fourth, the intervention programs would also enable parents and other child-care experts to enhance, monitor and evaluate children's progress in various developmental phases and skill domains at home and in school learning. Possession of such knowledge and skills is thus expected to offer individual children an invaluable opportunity for motor, social, intellectual and emotional development.

The first step toward creating systematic knowledge of child development and learning in Tanzania, then, is to develop Kiswahili (national) language instruments which can be understood by the majority of the people. Such instruments need to be ecologically validated to ensure representation of the socio-cultural context of Tanzanian families. The characteristics of such instruments should constitute behaviours actually observed from the children and their families. Subsequently, the instruments should contain information describing and explaining children's current development and functioning, in general, as well as the specific skills demanded by different environmental contexts in the culture.

Purpose of the Study

The overall purpose of this study is to understand children's developmental characteristics and transactions within the family environment and related contexts in Tanzania. Environmental transactions include the types and quantity of objects available for children in the family, specific events involving children in the home, and parental direction and guidance. Children's developmental characteristics involve motor, social, intellectual, emotional and academic skills and the related developmental problems in these areas observed in the Tanzanian context.

Objectives of the Study

The study's objectives are as follows:

1. To describe and analyze developmental and learning characteristics of children in the family; skill areas observed cover the following developmental domains:

gross-motor, fine-motor, receptive and expressive language, conceptual comprehension (aspects of environment), situation comprehension, self-help, and personal-social skills;

2. To describe the specific features of the family provisions and stimulation for development and learning; provisions and stimulation cover the following: (a) play objects available to the child, including games and reading materials, (b) language stimulation (Kiswahili and/or other), (c) physical environment, including safety, cleanliness and conduciveness to development and learning, (d) family relations, pride, affection and warmth, (e) stimulation of academic behaviour, (f) modeling and encouragement of social maturity, (g) variety of stimulation, and (h) physical punishment; and
3. To examine the extent to which the home environment helps the child to develop school learning related abilities in language (vocabulary), quantitative reasoning and in memory functioning.

Delimitations and Limitations of the Study

Delimitations

The study was conducted in the Dar-es-Salaam urban environment and its vicinity. Since 80 percent of the Tanzanian population lives in the rural areas, the urban setting can not be representative of the characteristic location for the majority of the population. Choice of Dar-es-Salaam was necessitated by the trial nature of the research instruments and the exploratory stage of the study.

The urban environment was considered an appropriate setting for the initial study because of the assumptions underlying the tasks in the research instruments. The instruments assumed that the research sample families possessed modernization characteristics reflective of the Western family style and education. Thus, even though the ultimate goal is to modify the instruments for adaptation in Tanzania, careful selection of the setting and the initial sample was vital. The scope of the investigation was thus limited by the restricted setting and sample.

Children aged five and six were specifically selected due to established significance of developmental changes attained by children during the middle childhood period. Dramatic and enduring changes have been observed in physical, social, intellectual and academic functioning of five to eight year olds. The activities designed in the instruments were specifically to assess developmental functioning of the five and six year olds in the Western preschool environments and probably equivalent environments elsewhere.

Ideally, a broad spectrum of child population from both educated and uneducated families, nursery school and non-nursery school attendants and from rural and urban environments should be involved. Confinement of the sample to urban nursery school attendants greatly limits the external validity of the results. In addition, children of all ages (one to eight years old) need to be studied before developmental norms can be established for various developmental functions in the population.

Limitations

Limitations of the study were closely associated with the selection of the setting and the sample. The results could be generalized beyond the five and six year olds in the elite families in Dar-es-Salaam and, cautiously, to comparable urban families in Tanzania where such children attend nursery schools. The limited sample of ten children for each of the two age groups naturally limits the extension of the findings to cover children of other ages.

The interpretation of the results was further limited by the underlying cultural values of the tasks in the instruments. Children were expected to demonstrate competencies in seven developmental areas and sufficiency of family provision for early childhood stimulation in eight areas. Due to the differences in the developmental levels of the Tanzanian and the American/Canadian societies, the items could easily be affected by cultural variations of the two societies, especially the early socialization and childhood stimulation practices.

Although the long-term goal of the study was to establish children's developmental characteristics and developmental problems in Tanzania, delimitation of the setting and the sample during the initial instrument testing stage was necessary. Studies covering broader geographical locations, ages and cultural variations would be planned after reliability and validation of the research items had been attained through modification and incorporation of indigenous child development tasks and behaviours.

Studies of the influence of the home environment on various aspects of early childhood development and related developmental problems are discussed in Chapter II. Chapters III, IV, V, and VI present methods of the study, the rationale and research questions, data analysis and the results, and discussion, respectively.

CHAPTER II

LITERATURE REVIEW

Introduction

The relationship between the family environment, early childhood development and learning has recently become an important area for social and psychological research in the endeavour to understand how the various factors interact to enhance or inhibit early development and learning (Bronfenbrenner, 1986). Researchers have concentrated on the effect of materials and psychological stimulation found in the family, the neighbourhood and their relative influence on the child's physical, intellectual, social/emotional, early language development, and communicative competence (Anselmo, 1987; Caldwell & Bradley, 1979). Some child psychologists have specifically focused on the parents' involvement, interactions and perceptions of children's developmental strengths and problems (Ireton & Thwing, 1974, 1979).

The understanding of early childhood development and learning, its malleability, and flexibility have provided the rationale for the development of early childhood stimulation and intervention programs for normal and handicapped children (Guralnick & Bricker, 1987). The information has been particularly useful in identifying children with handicapping conditions associated with familial, environmental factors during the early school years (Westling, 1986). Parent training programs have been developed to help them improve rearing practices to maximize developmental potentials of normal and handicapped children in the family and preschool environments (Pfanistiel & Seltzer, 1985). Parents have also learned about normal and abnormal developmental characteristics in young children and the effect of the home environment on early development and learning (Caldwell & Bradley, 1979, 1982; Lechtenstein & Ireton, 1984).

The characteristics of the home environment and the manner in which it impacts on early childhood development and learning have formerly been studied through analysis of socio-economic status variables, the socio-economic status approach. The approach uses measures of family income, parental education, occupation and family size to determine family status, its provisions for early childhood development and the effect on later school achievement.

The family status explanations could not explain the complex interrelationships and interactions of the child and the home environment processes (Cox, 1987). The home environment processes had to be studied on their own merit, for example, analysis of dynamic process variables actualized through parent-child-environment interaction. A combination of the socio-economic and dynamic process variable analysis was expected to provide detailed information for planning enrichment and intervention programs for both normal and handicapped children.

Literature Review Plan

To understand the complex interaction of the SES and process variables and their effect on early childhood development and learning in the family, various areas of the relevant literature are reviewed in the discussion which follows. The review is intended to highlight the characteristics of normal and delayed child development, children's acquisition of various developmental skills and functioning and the influence of the home environment on child development and learning as reflected in the different aspects of interaction with that environment.

Various characteristics of developmentally delayed children and the means for screening and assessment are reviewed. Two parent-administered, developmental and home environment screening and assessment inventories are critically examined for adoption to Tanzania. In the process of discussion, problems of adapting imported child development research instruments and materials are analyzed to suggest productive modification techniques.

The first section of the review deals with the influence of family status and process variables on early childhood development and learning. The second section presents a summary of normal child development characteristics in the middle childhood period. The third section examines some characteristics of developmentally delayed children. The fourth section examines the effect of the home environment on the development of quantitative reasoning, language-vocabulary and memory functioning. This section specifically attempts to present associated developmental problems in the three skill domains in relation to home environment influences.

The fifth section deals with methods for screening and assessment of developmental delays and potential learning problems. The Home Observation for the Measurement of Environment Inventory (HOME) and the Minnesota Preschool Inventory (MPI) are reviewed. The sixth section reviews early childhood development studies and the associated methodological and informational problems in Tanzania. The rationale for adoption of the HOME inventory and the MPI as a means of overcoming informational and methodological limitations observed in the Tanzanian studies is discussed. The seventh section discusses problems involved in the modification and adoption of imported child development research instruments and materials to a different culture. Theoretical and practical issues of conceptual differences, validity and reliability, language, and cultural implications are analyzed.

Research on the Influences of Home Status and Process Variables on Early Childhood Development and Learning

Whereas SES explanations provided important information for understanding the contributions of the home environment to early child development and learning, the explanations were insufficient in understanding the complex dynamics of the interaction (Cox, 1987; Gottfried, 1984). For example, Bloom (1964) observed that status variables accounted for only 25 percent of the observed variability in children's school performance and intelligence tests in Western society. Later studies (Bloom, 1976; Rutter, 1975) further observed that the level of parental aspirations was a more crucial factor than social class in explaining the greater variability in educational achievement of children. They argued that the use of general indices of social status obscures important differences among environments.

Walberg and Marijobanks (1976), in reviewing research on the family and cognitive development, observed that there was little effect of status variables on cognitive performance that was unmediated by environment process variables, thus the need for comprehensive measures of family environment. McCall (1973) demonstrated that children's developmental functioning increases or declines in response to changes in environmental conditions. Thus, environmental process measures could be more useful and appropriate in guiding early childhood stimulation and intervention strategies.

Home Process Variables

Evidence from summary reviews of longitudinal studies examining the relationship between aspects of the home environment and young children's cognitive development have supported the positive effect of early childhood environment on later intellectual and educational attainment (Gottfried, 1984). The specific aspects of the home environment showing the highest correlations with measures of young children's cognitive performance were measures of maternal involvement with children, provision of appropriate play materials and opportunities for variety in daily stimulation.

The home background language experience, especially receptive vocabulary and task orientation, was a major predictor of reading achievement of children at age seven (Gottfried, 1984). The quality of receptive vocabulary directly depends on the quality of verbal interaction between parents and the child in relation to other experiences. The home influences the child's motivation and ability to concentrate on structured learning tasks characteristic of school activities. Clarke (1984) concluded that early home background factors play a major role in determining children's initial educational attainment and their effects extend to later achievement.

Summary results of a detailed longitudinal study on the complex influence of the SES and home environment factors on childhood development and school achievement in Britain (Cox, 1987) indicated that children's achievement outcomes are influenced by a multi-dimensionality of factors. Societal effects, peer influences, family, teachers and the child's own behaviours all shape the ultimate levels of children's cognitive development, academic competence and personal adjustment. The study stressed the need to understand ways in which variations in early parental rearing practices, philosophies and techniques eventuate in children's later achievement characteristics.

The effect of parental education and income level, although significantly associated with schooling, fails to account for child achievement outcomes. Family process variables and parental expectations, values, their responses to children's needs, guidance and help with academic work should explain the dynamics of the interaction which enhances child development and learning (Cox, 1987). Understanding these dynamic process variables provides the rationale for developing enrichment parenting skill programs. The longitudinal study of children aged seven to fifteen years of age demonstrated that family environmental influences mediate children's achievement through parental support for school learning in combination with child motivation, academic skill variables and teacher attitudes.

Bradley and Caldwell (1976) used the HOME Inventory to observe environmental influences on young children in terms of cognitive stimulation. The study indicated that effects of parental processes, such as maternal acceptance, responsibility and involvement through provision of toys, organization and variety of stimulation, had powerful effects on later school achievement.

Contrary to Western research results of the influence of SES variables on young children's early development and subsequent influence on later school achievement, studies from Africa have produced inconclusive results (Blair, 1981, Lesotho; Mbilinyi, 1984, Tanzania; Nyinawumuntu, 1982; Oyewole, 1984, Nigeria). The Nigerian and Lesotho studies did not find any relationship between children's achievement and parental education, profession or family income. The possible explanation was that income or education of parents in the two studies did not influence the availability of educational materials nor did they alter the family's mode of parent-child interactions commonly observed in Western families as increased instruction of children.

Nyinawumuntu's (1982) and Mbilinyi's (1984) studies in Tanzania found favourable educational material conditions and positive parental attitudes toward children's achievement among the professional and skilled working families. Surprisingly, more parent-child interactions, both social and verbal, were observed among the low income unskilled workers' and peasants' families than among the professionals. It seems that the amount of parental education or wealth may not mean abundance of children's developmentally stimulating and learning materials in the home. However, researchers from both developed and developing countries agree that the stability of the family environment influences children's early development and later attainment considerably (Blair, 1981; Gottfried, 1984; King & Myers, 1983).

The social, economic, political and educational changes taking place in developing countries, and subsequent influences on child rearing practices, are likely to make the impact of SES and family process variables on early childhood development and learning significant in the future (Héron & Otaala, 1982). As a result, the welfare of normal and handicapped children will depend on parental understanding of how to serve children's special needs through provision of appropriate material and psychological stimulation in the early childhood period.

In summary, the family environmental process variables include the language models available in the home, academic guidance, achievement motivation, opportunities and stimulation provided to explore different aspects of the environment both at home and in the neighbourhood, intellectual interests, and participation in general activities of the family (Bloom, 1964). In addition, work habits emphasized by the home, and the provision for a variety of learning situations correlate positively with the child's school performance (Cox, 1987; Lazar & Darlington, 1982).

The home and neighbourhood environments provide human and non-human materials of the external world which may be directly observable through association with the child's experience. These materials influence the child's competences through involvement in developmentally relevant experience (Bronfenbrenner, 1986). These experiences, if they are frequent and satisfying to the child, facilitate development and nurture learning, thus making the quality of person-to-person and child-object interactions crucial factors in the performance of physical, social, intellectual, speech and communicative functions (Scarr, Wienberg & Levine, 1986).

The next section summarizes developmental milestones observed among Western children and, to some extent, in cross-cultural studies (Curan, 1984; Cole &

Cole, 1989; Jahoda & Lewis, 1988; Werner, 1979). An understanding of the normal and handicapped child development milestones will help parents, as well as preschool and school teachers in Tanzania to grasp the complex interactions between the child and the family environment to facilitate screening, assessment and creation of optimal early childhood stimulation and prevention of handicapping conditions.

Normal Development and Developmental Delays

Normal development refers to conformity to established developmental characteristics derived from a representative group of average, normal, child development. The normal group is free from extremes of physical, social, emotional and intellectual dysfunctions (Reber, 1988). In terms of behaviour, normal development reflects typical patterns of behaviour observed in society. Such behaviour is judged according to its functional and adaptive value for the social system.

Normality could thus be defined with statistics and consensus (Scarr, Wienberg & Levine, 1986). The statistical definition is based on frequency, i.e. those patterns of development that occur most often in a population are considered normal. The consensual definition depends on agreement among observers of behaviour or a characteristic that is desirable at various stages of development.

Observations and testing of children in different situations has produced a limited number of developmental characteristics and skills normally acquired at specific age levels. These characteristics function as milestones for determining if normal development is occurring in the areas of gross motor, fine motor, personal social and language. Each stage of child development is characterized by particular developmental features and skills which are determined by internal maturation of the child and the cultural environment (Ellis, 1986; Westling, 1986). Normality in development and learning in children should thus be determined by an individual's performance on culturally appropriate, ecologically valid tasks and behaviours (Baine, 1988; Blair, 1981). The next section presents the adult's general cross-cultural responses to developmental characteristics of the early/middle childhood period.

Adult's Response to Developments During Middle Childhood

The significance of middle childhood development is cross-culturally underscored by increased adult involvement and intervention in children's activities and behaviour. Guidance and direction are provided in terms of language, thinking, socialization and problem-solving. In Western societies, it is the period for organized school learning; for non-Western societies it is a period for apprenticeship to adult responsibilities (Jahoda & Lewis, 1988; Rogoff & Lave, 1984). For many societies, formal schooling begins at the age of six or seven years (King & Myers, 1983).

Cross-cultural studies in child development and socialization (Jahoda & Lewis, 1988; Werner, 1979; Whiting & Edwards, 1988) show that adults, especially parents, become more concerned, monitor, direct and intervene in their children's activities, movements and behaviour. The middle childhood period is critical for orienting children to expected adult norms and values.

Developmental norms which characterize children's actions and behaviour at various developmental stages indicate that many skills and abilities emerging during middle childhood persist and are consolidated in later years (Cole & Cole, 1989; Lefrancois, 1989). Development is strongly influenced by the family, peers, the public media and the culture. As children learn to function more independently, developmental problems become evident as impaired functioning in different domains becomes manifest (Guralnick & Bricker, 1987; Scarr, Wienberg & Levine, 1986). The middle childhood period is thus important for detecting developmental handicaps or the presence of handicapping conditions.

Developmental Delays

Developmental milestones are skills that an average child usually achieves at a particular age level (Thain, Casto & Peterson, 1980). Once the developmental norms are established for a particular group of children, it follows that the greater majority could now feasibly attain the milestones within the established period. Those individuals whose development falls significantly below the norm are considered to be developmentally delayed and in need of screening and assessment to determine the nature of the problem for remedial intervention.

The terms "developmental delay," "developmental disability" and "handicap" are used synonymously to describe a general problem in development (Canadian Association for the Mentally Retarded [CAMR], 1978). Parents' and educators' concerns are to identify those handicaps which are likely to interfere with normal functioning and the acquisition of functional and learning skills. Developmental delays represent such handicapping conditions as physical disability, hearing impairment, visual impairment, mental retardation, emotional disorders and language difficulties (CAMR, 1978; Winzer & Rogow, 1987).

Developmental delays can occur in every aspect of the child's development (motor, cognition, information processing, problem solving, etc.), especially the ability to apply information from one situation to another (Guralnick & Bricker, 1987). Developmental delays in the motor, communication, language and socio-emotional areas may reflect the presence of global developmental problems in the child as observed during everyday functioning.

Characteristics of Developmentally Delayed Children

Developmentally delayed children in Western society are determined through a comparison of a child's performance to norms established for developmental milestones in each area of development. Delayed children reach developmental milestones at a slower rate even though they follow similar developmental patterns (Guralnick & Bricker, 1987; Winzer & Rogow, 1987). In most cases, such children reach lower levels of development, especially in the delayed areas if inter-vention is not planned in time to remedy the handicapping condition.

Compared to normal children, developmentally delayed children may exhibit qualitative differences in their developmental processes (American Association on Mental Deficiency [AAMD]; 1983; Grossman, 1983). They may have lowered intellectual functioning reflected by poor performance on standardized intelligence tests. Such children may also experience problems in adaptive behaviour, especially in attaining milestones in social adaptation, gross and fine motor functioning, language and general communication observed during infancy and childhood (Grossman, 1983).

Developmental delays may be caused by many factors ranging from genetic disorders to depressive environments. The bulk of developmental delays, however, constitutes those related to environmental causes for which intervention can be organized (Westling, 1986). Physical developmental delays which affect motor functioning in a large number of children could be greatly minimized by modifying the environment early in life (Winzer & Rogow, 1987).

Serious difficulties are encountered in the early identification of non-physical developmental delays which later affect school learning. Language and speech problems, mental retardation and socio-emotional disturbances may not be vividly understood in early childhood (Westling, 1986). Children with a mentally handicapping condition especially experience greater difficulties in learning and in coping socially with their age-mates because their social skills are immature (Guralnick, 1986). Parents and teachers may often observe that these children have problems in generalizing from one context to another, have difficulty in learning new ideas, in mastering concepts and materials, and are slow in engaging in self-directed play and activities (Krakow & Kopp, 1983).

Emotional delays may present another difficult area for parents, teachers and child care personnel. Emotional and behaviour problems include adjustment difficulties, psychosocial dysfunctions, behaviour disorders, mental disorders, mental illness and infantile autism (AAMD, 1977; CAMR, 1978). Problems related to emotional disturbances are often inferred from observations of children's behaviour as they function in their physical and a socio-cultural environment and their psychological processes.

Identification of Children at Risk for Developmental and Learning Problems

Children at risk for developmental and learning delays may not be identified and categorically confirmed in early childhood. Early signs for developmental delays may be detected, but most handicaps are confirmed during middle childhood and school age period.

Developmental delays have generally been classified according to psychometric assessments conceptualized in terms of the degree of severity of developmental delay (AAMD, 1977). The classification ranges are: (a) from below IQ 20-25 for profoundly delayed; (b) 20 to 40 for severely delayed; (c) 35 to 55 for moderately delayed; and (d) 50 to 75 for mild delays. It has been speculated that mildly delayed children develop at a rate between half and two-thirds of normally developing children (Guralnick, 1986). By implication, then, the lower the category of delay classification, the slower the rate of achievement of developmental milestones.

Whereas profound and severe developmental delays tend to be confirmed quite early in childhood, mild developmental delays are usually confirmed in the middle childhood and early school years. Understanding a child's developmental and home environment characteristics can help in appreciating the significance of mild developmental delays and how their negative impact can be ameliorated (Westling, 1986).

Children manifesting developmental delays in the family generally experience problems in care giver-child interactions. Developmentally delayed children experience difficulties in comprehending the parents' speech complexity. Due to impaired attention capacity, they often fail to pay adequate attention. As a result, they have difficulty in utilizing the physical and social environmental resources for effective play and communication (Krakow & Kopp, 1983). Developmentally delayed children are sometimes slow in adapting systematic strategies in play and are slow in problem-solving situations.

Frequently, children with developmental delays also fail to monitor other playmates, to involve others in play, to initiate interactions and have difficulty in shifting play activities readily (Krakow & Kopp, 1983). Guralnick (1986) observed that developmentally delayed preschool children experienced extraordinary difficulty in establishing social exchanges with peers, a problem which could be explained by the directive pattern of care giver-child relations, the unusual deficits in language development, the existence of behavioural problems and other aspects of the social environment.

Despite the emphasis on the family environmental contribution to developmental delay, Kopp (1983) argued that the crux of the problem might be reflected in the context of information processing difficulties. If the problem is in information processing, developmentally delayed children might be at risk for a number of other developmental problems related to impaired social and cognitive functioning. This broad conception of developmental delays in children would thus favour the use of broad-based developmental screening and assessment instruments which combine psychometric and non-psychometric measures.

Current emphasis on understanding developmental norms, delays and problems from the parents' and experts' views, focuses on the acquisition of both general and specific domain skills within defined contexts and task demands in family settings. The family has thus provided baseline developmental information on which later functional strengths and problems are determined (Ireton & Thwing, 1974). The following section briefly examines the influence of the family environment and the problems related to the acquisition of quantitative reasoning, language (vocabulary) and memory functioning.

Effect of the Home Environment on the Development of Quantitative Reasoning, Language and Memory Functioning in Preschool Children

General developmental functioning and success in school learning depend on the extent to which children have acquired quantitative reasoning, language and communication skills and memory functioning (Siegler, 1986). Studies on early childhood development have indicated that by the time children enter formal (at age five to seven years), they possess substantial knowledge of number concepts and operations (Piaget, 1952; Scarr, Wienberg & Levine, 1986). In terms of language acquisition, school-age children manage oral language skills, listening competencies, vocabulary comprehension, auditory discrimination, contextual and situational comprehension (Winzer & Rogow, 1987). Major shifts in memory functioning have been observed in children's information processing activities between the ages of five and nine years (Curran, 1984; Siegler, 1986).

Development of Quantitative Reasoning and Children's Home Environment

The middle childhood period is characterized by major shifts in intellectual functioning reflected in children's increased ability to understand number concepts, especially conservation of quantities (Liebeck, 1984). Children become operational thinkers which enables them to use symbols in classifying, number manipulation and conservation (Barnett, 1982; Flavell, 1985).

The significance of a rich, stimulating home environment in the development or non-development of quantitative reasoning is underscored by the fact that children acquire mathematical experiences through seeing, feeling and exploring physical objects in the environment. Four sequential stages help children to develop mathematical abstractions (Liebeck, 1984; Troutman & Lichtenberg, 1987). The sequence includes, first, the child's experience with physical objects. Through object manipulations, children learn object properties and their behaviour. Second, children learn to associate language with objects. Their ability to name objects prompts adults to act with intention to help them (children) learn object characteristics and relationships. The third stage involves children's perceptions of pictures and their similarities and differences from real objects. Fourth, children realize that pictures possess some common features with real objects and that both pictures and words represent real objects and actions in the world.

The child's family environment provides the medium for the first experiences with number concepts. Normally developing Western children aged five years can count up to ten objects and can classify objects according to size, shape and colour. They seriate a set of ten graduated objects and use the vocabulary for representing quantitative relations (Siegler, 1986; Troutman & Lichtenberg, 1987). Differing levels of quantitative reasoning among young school-age children have been observed in non-Western cultures (Jahoda & Lewis, 1988; Whiting & Edwards, 1988).

Research evidence on the influence of the family environment on children's development of number concepts has shown that children are regularly engaged in social activities involving numbers (Saxe, Guberman & Gearhart, 1987). In a study involving 78 two-and-a-half to four-and-a-half year olds, the younger children differed from the older ones in their numerical understanding across tasks, recitation of counting words, production of cardinal values for single arrays, numerical comparisons and reproduction and arithmetic transformations. It was also observed that there were variations in the complexity of children's everyday number activities compared with findings on age and social class. At home, mothers informally taught their children number concepts according to age and ability. Children's numerical environments were generally mediated by their everyday activities in the home and preschool contexts.

Blair (1981) and Mbise (1986) observed that Lesotho and Tanzanian preschool children acquire quantitative reasoning through manipulating objects such as stones, bottle caps, marbles, sticks and utensils found in their local environments. The extent to which the family environment offers children the opportunities to play with objects, to interact with adults and to encourage language development facilitates representational activities important to the acquisition of quantitative skills.

Delayed acquisition of quantitative reasoning has been observed in children through their inability to observe, explore and communicate quantities. These children fail to match, sort, compare, order and classify objects (Otto & Smith, 1980; Siegfried, 1969). At the surface level, developmental delays in numerical development in young children appear in the form of confusion of numbers in counting, repetitions, double counting and skipping numbers, problems generally common in young children. At the school level, mathematical problems may be manifested in visual-spatial-temporal organization, right to left orientation, perception and identification of symbols, sequencing and disturbances in quantitative thinking (Liebeck, 1984; Ontario Ministry of Education, 1980).

Various tasks have been employed to assess preschool children's number concept development (Piaget, 1952; Troutman & Lichtenberg, 1987). The tasks include: recitation of number words in the conventional order to measure knowledge of number words, and comparative number judgements to assess children's knowledge of the order relation between pairs of words. Reading numerals is used to assess children's ability to recognize written numerals. To assess children's understanding of an array, order invariance can be used to show children that numbers can be counted in different orders and that each order produces the same outcome/value.

To assess children's knowledge of cardinality, that the last number word recited can indicate the value of an array, several numbered cards or objects can be used. Children can then be examined for elementary arithmetic/ counting skills of addition, where children start with addition of objects and subtraction from a group. Generally, the operations involve the addition of one item following the cardinality question. For complex counting, where children are tested for the strategies which they employ to produce a counting of a particular spatial configuration of elements, an array of objects can be presented. The child then counts the objects by touching each one of them (Liebeck, 1984; Copeland, 1984).

Research on Children's Language Development and the Home Environment

Language development is important for concept formation and general communication. As a result, disorders of language, in general, constitute problems in comprehension and expression of thought (Winzer & Rogow, 1987). Language functions as a tool of social communication and interaction giving form to thought and imagination (Luria, 1981). The ability to manipulate linguistic forms liberates children from the "here and now" and enabling them to consider the past and project into the future (Luria, 1981; Piaget, 1959, 1968).

Language development involves acquisition of the sound structure of language (phonology), the rules governing the ordering of words within sentences (grammar), and the meaning of words, phrases and sentences (semantics). From the age of six months onwards, children begin to associate certain sound patterns with people, objects and events in the environment (Bagnato & Neisworth, 1987).

Comprehensive studies of early language development in children have stressed the importance of mothers talking to children (Bates, 1976; Winzer & Rogow, 1987). Children require social interaction to provide them opportunities to express and experience communication through a variety of contexts. The adults' role in early childhood language development is to encourage children to participate and to provide resources for skills and information (Caldwell & Badley, 1979). The quality of adult-child interaction has been identified as the single most important factor influencing children's language development. Children learn to listen and discern meaning from the context of adult interactions.

The linguistic environment of the home makes varieties of language available to children. The home environment may provide rich and varied language experiences or it can seriously be limited, thus leading to the development of limited language and communication skills. Since language acquisition overlaps and relies upon social and cognitive growth, the family environment should provide general stimulation for overall child development. The home environment should be rich in linguistic variety, intact in cognitive/perceptual stimulation, and balanced for normal social interaction. Young children need the opportunity to hear and exchange mature language and ideas with adults; otherwise, cognitive/ perceptual deficits may develop where an unstable family environment prevails.

Delayed general development may sometimes be caused by or reflected in language problems (Winzer & Rogow, 1987). Mental retardation has often been associated with delayed speech and language difficulties. Delayed language development and functioning may adversely affect other areas such as cognitive, social and emotional development.

Children with speech and language problems in childhood manifest the following symptoms: delayed language development, immature speech patterns, frequent errors in grammar, problems in comprehending and following oral instructions and directions, problems of conveying descriptive information accurately, and evidence of recall and word finding problems (McLean & McLean, 1978). Generally, children with speech and language problems perform visual matching tasks, block building and drawing better than they perform tasks that require language skills.

The family environment can provide a rich linguistic and social milieu for stimulating language development and the acquisition of quantitative reasoning. However, without an efficiently and normally functioning memory capacity, developmental delays are inevitable. The following section discusses the development of memory functioning as influenced by the home environment.

Children's Memory Functioning and the Home Environment

Memory constitutes a wide range of abilities developing as children grow into adults (Schneider & Pressley, 1989). Educator's interest in children's memory development and functioning at various ages depends on its effect and influence on all the activities that people perform. For example, memory is involved in the recognition of shapes, odours and places during conversations, when solving problems, while reading books, when preparing meals and, in particular, in performing various examinations (Curan, 1984). Memory is literally involved in everything that people think and do.

Memory of previous experiences helps one to interpret situations and react in appropriate ways. Memory influences people's overt and covert behaviour, as well as intentionalities reflected in thoughts, perceptions and attitudes. Broadly conceived, therefore, memory is an integral part of one's physical, social, intellectual and emotional activities/experiences (Siegler, 1986).

The relationship between memory, home and school learning experiences should be perceived in the general context of cognitive development. School learning, particularly, involves children in attending to many instructions and directions (Siegler, 1986). The nature of school subjects involves learning and remembering large amounts of information for later recall during examination periods (Curan, 1984).

Studies of children's memory functioning in different social contexts have shown that young children acquire new skills through applying them to problems in different contexts (Flavell, 1985). Memory processes, such as categorizing, rehearsing, elaborating, structuring and understanding meanings, develop with increasing age and experience.

Curan (1984) studied the factors affecting school-age (6 to 12 years) children's storage of information in memory, especially the number and variety of different tasks found in the Nigerian Yoruba home environment. The results indicated that the youngest children knew how they remembered information but failed to elaborate what they remembered.

Older children identified greetings, songs, proverbs, stories, riddles and various festivals in the society as being socially important to remember. Concerning the various mnemonic devices utilized in the family and everyday activities, the children indicated that parents required them to remember domestic chores and school related activities. Mothers emphasized memory of moral issues and respect for elders. Older children used repetition of the information and rehearsals as a means of remembering.

Istomina (1977) studied the manner in which Russian preschool children (aged 3 to 7 years) develop voluntary memory in a natural environment or game situation in contrast to the laboratory situation. Under laboratory conditions, children listened to five words read by the experimenter and were asked to recall the list after a short delay. In the game situation, children were sent to buy five items in the store. Results indicated that children remembered more items under the shopping task. The differences in recall under laboratory and natural task conditions may be attributed to different motivational incentives for the children (Schneider & Pressley, 1989). Remembering the items in the game situation may have been intrinsically an important goal with real meaning for children.

Research evidence shows that three to four year olds do not show intentional memory behaviours when asked to remember instructions (Istomina 1977; Cole & Cole, 1989). These children did not use deliberate encoding to assist memorization; however, their memory processes can be improved through involvement in active manipulations which increase meaningful processing of material. Although children lack the necessary strategies, goal directed activities in the memorization of objects, pictures and words can be observed among five year olds. The six to seven year olds, although possessing some facilitative memory skills such as repetition for objects and pictures, lack conscious reorganization strategies (Schneider & Pressley, 1989).

The influence of the family environment on the development of memory functioning is closely associated with parental guidance in the performance of various tasks under supervision and then independently (Anselmo, 1987; Siegler, 1986). Parents and teachers are generally sensitive to what and how children remember, utilize, understand and operationalize instructions or orders (Siegler, 1986). To enhance children's memory functioning, therefore, parents provide modelling procedures, direct verbal instructions and focus on the child's attention (Rogoff & Gardner, 1984).

> . . . through a combination of modeling effective procedures, direct verbal instruction, focusing the child's attention on tasks that are a moderate distance beyond their current competence and encouraging children to verbalize what they are doing, parents help children to deploy cognitive resources effectively. (Siegler, 1986:240)

The family environment, therefore, plays a crucial role in the development of language, memory and general cognitive development, including quantitative reasoning. A non-stimulating family environment may inhibit optimal general development and acquisition of these skills, thus leading to developmental delays and learning problems observed during the early school years. Studies of the influence of the Tanzanian family environment on early childhood development and learning will be reviewed in the next section.

The Tanzanian Home Environment: Its Influence on Early Childhood Development and Learning

The choice of an imported child development research instrument for studying developmental characteristics and functioning of Tanzanian children and their family environments needs to be based on existing studies. This review will present some of the child development issues studied and then highlight the associated methodological problems. The importance of parent and child caregiver understanding of the characteristics of normal child development and handicapping conditions in children will be stressed. The home environment under which normal child development and handicaps occur due to the presence or absence of early childhood stimulation is examined to enhance informed parental intervention where necessary. Both parents and teachers need to recognize and understand normal, abnormal and problematic development in their children.

Several studies have attempted to explore the needs and problems of young children in Tanzania. The need to understand how families and early child care centres provide children with appropriate developmental stimulation, explore children's needs and problems, understand the children's home and school environments and their interrelationships were the principal objectives behind these studies (URT & UNICEF, 1985; Nyinawumuntu, 1982; MTUU, 1985). Research on the early school child has received precedence over the preschool child, probably due to the importance attached to school learning and related problems, as well as greater involvement of school age children in adult activities and responsibilities.

A country-wide survey of the young child in Tanzania (Omari, 1977; Wassao, 1977) indicated that young children needed improvement of the home environment in terms of nutrition, health care, social and psychological stimulation through increased play opportunities and availability of play materials for normal development. The study also emphasized the need for increased parent or adult child interactions and general improvement in traditional child rearing practices.

Services for children with handicapping conditions were sparse, especially those related to early childhood identification of developmental and learning problems (Omari, 1977). Lack of reliable incidence data for various types of handicaps was noted and recommendations were made for more detailed research into the conditions affecting early childhood development and provision of appropriate services to both preschool and school children (UNICEF, 1979).

The influence of children's home background on various aspects of early school learning was studied by Nyinawumuntu (1982) and Mbilinyi (1984). Nyinawumuntu studied the factors affecting performance in verbal reasoning and picture recognition among 80 first grade children with and without preschool experience. The family background variables studied included parental education, occupations, parents' income, family size, children's age and sex and attendance or non-attendance in a preschool education.

Questionnaires were employed for collecting SES and family background information, while a translated, modified version of the Peabody Picture Vocabulary Test was used for testing children's verbal reasoning. The family background information revealed that families with children attending preschool and those without children attending preschool differed in their provisions of educational materials and early childhood stimulation. Large family sizes were characteristic of low income, unskilled workers and peasant families. Smaller family sizes, better provision of educational facilities, play materials and positive parental attitudes toward intellectual and academic development favoured the professional and skilled middle-income families.

Variations of parent-child verbal and social interactions were observed between the middle- and low-income families. Low-income families and peasant parents spend more time talking and working with their children than middle-income families. This finding differs from the observed patterns of child-parent interactions in Western families, where middle-class parents spend more time interacting and educating their children than do lower-class parents (Bloom, 1976; Cox, 1987; Gottfried, 1984). A possible explanation of this phenomenon in the Tanzanian family would be the limited financial and material resources of low-income families restricting their social activities outside the family. Parents in professional families tend to spend more time at work and have more resources for accessing recreational facilities mostly found outside the home.

Regarding families' assignment of duties and responsibilities to children, families whose children attended preschool education encouraged school related activities at home, allowed children more freedom and monitored children's activities closely (MTUU [Mpango wa Tanzania UNESCO/UNICEF], 1985). Families whose children did not attend preschool emphasized performance of family chores and accorded children little freedom to play (Mbilinyi, 1984). In school, teachers observed that Grade 1 children with preschool experience performed significantly better in picture recognition and verbal reasoning than did children without preschool education (Nyinawumuntu, 1982). The studies showed further that the age of the children and the type of home, whether "poor" or "affluent," were important factors in verbal reasoning and pictorial performance.

Nyinawumuntu's study managed to establish some basis of children's understanding of their environment and the mastery of the language used to represent the different features. The study should be expanded to relate the observed SES factors to the dynamics of family interactions to determine whether the availability of educational facilities combined with patterns of family interactions produced the observed significant differences among the families or whether the activities and interactions at the preschool centres were responsible.

Mbilinyi (1984) studied home processes that contribute to children's development of reading and writing skills in Tanzania. The investigator found that family work habits, academic guidance and support to children, general stimulation through children's involvement in family activities, parental motivation and aspirations for children and language use were important factors. The findings concur with Bloom's observations of the importance of parental mediation for children's success through modelling and stimulating parent-child interactions.

Mbilinyi observed further the low priority given to school activities in some of the rural families. Play or recreational activities for children were viewed as a waste of time, and were thought to encourage laziness and irresponsibility among children. Children in the rural areas were thus kept busy herding, gardening or performing domestic assignments after school. Lack of safe play environments compounded with a shortage of play facilities and the negative attitude of the parents made play an insignificant activity. Children have been observed to create their own play facilities and opportunities despite the adults' discouragement (Mbise, 1986).

Once again, the importance of understanding the dynamics of the home process factors influencing the Tanzanian child's development and learning in the home and their relationship to school learning was stressed. Specifically, these include: (a) the family work habits; (b) parent-child interaction patterns; (c) academic guidance and support; (d) general stimulation of the home; (e) language models available to children; (f) parental understanding of children's general and specific needs; (g) and children's developmental problems.

In many of the studies, the needs of handicapped children have been overlooked, particularly in the preschool years (Heron & Otaala, 1982). Services for handicapped school children are scarce and inappropriate

(Kisanji, 1979; Mbise & Kysela, 1989). The inadequacy of service provision for normal and handicapped preschool and school children can be attributed to: (a) the limited understanding that adults have about needs of young children; (b) general community emphasis on the normal school-age child; (c) parental attitudes toward stimulation of early childhood development and education; (d) adults' ignorance about characteristics of normal development and handicapping conditions in early childhood; (e) lack of information on intervention services available in the community; and (f) a general lack of suitable screening instruments and the expertise to develop parent and child guidance programs.

Because of the above factors, the Tanzanian government and the ruling party have stressed their commitment to serve all children, normal and handicapped, at home and in school, by encouraging families and schools to create environments conducive to child development and learning (CCM [Chama cha Mapinduzi], 1987). Tanzania is currently in the process of formulating and formalizing early childhood development and education policies to actualize provision of services to all children (UNICEF, 1979; Ministry of Social Welfare, Tanzania, 1982; Ministry of Education, Tanzania, 1986).

In the process of expanding services, especially health and education, to all children, five childhood disability screening and assessment centres have been established in different zones of the country (Tamba, 1987). Availability of screening services provides the basis for collecting incidence data and the nature of special services required by children and their families. Since handicapping conditions can be identified only on the basis of a comparison with normal functioning, availability of suitable screening instruments and expertise should provide knowledge of the course of normal child development and functioning.

Kisanji (1979), Omari (1977) and Mbise and Nchimbi (1978) found that parents and school teachers lacked general understanding of techniques for detecting handicapping conditions in young children, lacked skills for helping children to learn various school skills, and had negative attitudes toward developmental and learning potentials of handicapped children. Consequently, they paid more attention to the activities of normal children. Helping parents and teachers to understand the developmental and learning potentials of young children, irrespective of their condition, would be an invaluable tool for facilitating family and school involvement in stimulating children's development.

The high incidence of 19.4 handicapped children to every 1,000 school children observed in Dar-es-Salaam (Kisanji, 1979) would be greatly minimized if teachers and parents viewed the visual impairments, hearing problems, mental retardation, social and emotional problems and learning difficulties observed among the children positively as challenges to be overcome rather than viewing them merely as negative handicaps. Concern over parents' and teachers' limited knowledge of the developmental nature of these handicaps and the subsequent debilitating effects can be attributed partly to ignorance and lack of parental involvement in early screening and assessment of children's progress.

Effective parental and general community involvement in the development of early childhood, screening, assessment and stimulation services for the family, the day care, the preschool and the school demands the elimination of certain constraints.

Constraints on Effective Parental and Institutional Participation in Early Childhood Development During Preschool Years

Success in parental and institutional participation in effective early childhood development and learning in Tanzania depends on overcoming a number of constraints. First, the parents and early child-care personnel need systematic knowledge of child development founded on the Tanzanian cultural context (Kysela, Mbise & Mboya, 1989). Such information should describe various aspects of child development, learning and the associated problems. Normal and abnormal physical, social, intellectual and language development should be clearly described. The specific developmental characteristics and functioning of the child can then be translated into appropriate developmental and learning program activities to guide parents, teachers and other child care givers (Baine, 1986; Kysela & Marfo, 1984).

The second constraint is associated with the strong family adherence to traditional values and customs in child rearing practices, especially in the rural areas (CCM, 1987; Chamwungwana, 1975; Omari, 1982). These practices conflict with attempts to introduce innovative child care practices. Adults' perceptions of the needs of children determine the manner in which calls for improvement in child health, nutrition, early childhood education, positive child-parent interactions and stimulation of play are received and implemented (Bwatwa, 1979; Mbise, 1986). Most importantly, traditional rearing practices operate on clearly defined principles governing relations between adults and children, thus regulating the free child-adult interaction and communication deemed necessary in the development of social, cognitive, emotional and linguistic competences in children (Anselmo, 1987; Bronfenbrenner, 1979; Jahoda & Lewis, 1988).

The third constraint concerns the difficulty in rationalizing change of strongly founded traditional child-rearing practices. It is unfortunate that most of the innovations in early childhood development and education have not been based on appropriate research of the Tanzanian culture (UNICEF, 1979). Success in any innovative child-care program needs to account for suitable principles and practices in traditional rearing patterns (URT & UNICEF, 1985; CCM, 1987). Attempts to research early childhood development and education in Tanzania should, therefore, include child-rearing practices, child-care systems, cultural norms in child development, and perceived and actual early childhood developmental and learning problems as determined by environmental demands (Fryers, 1984; Marfo, Walker & Bernard, 1983).

The fourth constraint to effective family participation in modernized preschool child-care and education is the limitation of knowledge that parents have about the significance of early childhood education and early intervention for handicapping conditions (Kisanji, 1979; Institute of Education, 1984). When interviewed, parents and community leaders in the rural areas in Tanzania accepted preschool education as an important and essential tool for early childhood development and stimulation, but they were ignorant of the time for appropriate introduction (MTUU, 1985).

One way in which to educate parents on the _why_, _what_, _how_ and _when_ of early childhood development and education is through involvement in developmental screening, assessment and intervention programs. The next section reviews the characteristics of two parent-oriented child developmental screening and assessment instruments: the Minnesota Preschool Inventory and the HOME.

Methods for Screening and Assessing Developmental Delays and Potential Learning Problems

Theoretical Bases of Screening Process and Instruments

Various approaches have been employed world-wide to obtain information on children's developmental and learning progress from infancy to childhood (Almy & Genishi, 1979; Anselmo, 1987). While in the process of accumulating developmental information, developmental problems and delays have also been noticed and interventions planned. Three principal approaches have been utilized to provide the basis for childhood developmental information and related problems.

First, the developmental milestones approach consists of tests for analyzing children's repertoires of behavioural competencies from several perspectives (Ireton & Thwing, 1974). The traditional screening tests have normally used milestones of development as a basis for identifying children's developmental strengths, delays and potential handicapping conditions. These milestones are derived from observations of normal children's development in the various domains and functional contexts (Brigance, 1978).

Second, developmental continua have also evolved from the traditional milestone and functioning approach. The developmental continua combine the traditional milestone approach with developmental strands as the source of items for screening tests (Alpen, Boll & Shearer, 1980). Examples of this approach include language screens, motor skill sequences, normal sequences of speech acquisition, as well as patterns of pragmatic language functions used to construct screening tests for communication competence.

More recently, parent-child interaction patterns involving the various aspects of child development and functioning have been developed for monitoring children's developmental progress (Caldwell & Bradley, 1979; Ireton & Thwing, 1974). The importance of parent-child interaction patterns for children's successful growth and development have emerged from child development research as informative dimensions of early childhood screening for delays or evidence of handicapping conditions. The use of parent-child interaction as standards for screening devices is exemplified in the Home Inventory of Family Environments (HOME) (Caldwell & Bradley, 1979).

This inventory explores the family-child interaction process looking for the presence of common features of child-rearing processes and environments found to be highly related to successful child development and learning. With current psychological emphasis on understanding children's general development and functioning in their everyday environments, it can be argued that the family-child interaction approach to screening can provide a rich source of information for screening processes with young children in Third World communities (Kysela, Mbise & Mboya, 1989). Confidence in the parents' or principal child-care giver's knowledge of development and developmental problems becomes the basis upon which the experts create and organize the information for screening instruments.

Parent or care-giver observations and interviews are currently gaining popularity for studying young children as a means of overcoming some of the problems experienced in earlier studies of young children conducted under laboratory conditions (Anselmo, 1987). Due to many experimental controls exercised in laboratory studies, the results have been difficult to generalize. As a result, the need has been recognized for ecologically based observations to facilitate generalized test results to real situations (Bronfenbrenner, 1979). To ensure children's greater cooperation, in-depth and detailed observations should be conducted in children's natural contexts: the immediate family environment, the intermediate surrounding environment and the larger social/cultural milieu (Bronfenbrenner, 1979). The following section will examine two Western developed parent-administered child and home environment screening instruments.

Rationale for Selection of the MPI and the HOME for Tanzania

The Minnesota Preschool Inventory (MPI)

The Minnesota Preschool Inventory was developed to systematically gather developmental information that mothers have about their children and to summarize the information in conjunction with developmental information available from other sources. The instrument assists in the evaluation of children's readiness to enter kindergarten through utilizing mothers' observations of their children's development, adjustment and problematic symptoms (Ireton & Thwing, 1979). The inventory was specifically designed for use with children aged four to six years.

The inventory provides a profile of children's functioning on seven developmental scales and four adjustment scales while detecting developmental problems in four areas (Ireton, Kempin & Lun, 1981). The inventory measures the developmental domains of Self Help, Fine Motor, Expressive Language, Comprehension, Memory, Letter Recognition and Number Comprehension. The adjustment scales include: Immaturity, Hyperactivity, Behaviour Problems and Emotional Problems. The four areas covered in symptom detection are in Motor, Language, Somatic and Sensory functioning.

Overall, the MPI consists of 150 statements describing children's behaviours at different ages. Eighty-seven statements describe developmental behaviours from two to six years of age. The 63 remaining statements describe adjustment problems and symptoms (see Appendix A).

The items in the MPI were selected from the original Minnesota Child Development Inventory (MCDI, Ireton and Thwing, 1974). The original MCDI contained seven developmental scales: Gross Motor, Fine Motor, Expressive Language, Comprehension Conceptual Scale, Situation Comprehension, Self Help and Personal Social Scale, with a total of 320 items. The developmental scales in the MPI are related to the basic Western elementary school skills, thus making the information meaningful to parents, teachers and child clinicians.

The Self Help domain contains 21 items describing behaviours such as eating, toileting and dressing. The Fine Motor domain contains 17 items measuring visual-motor skills from simple eye-hand coordination to complex fine-motor behaviour.

The Expressive Language domain has 18 items measuring expressive language from simple talking to complex communication. The Comprehension domain contains 34 items measuring language comprehension from simple understanding to comprehension of concepts.

The Memory domain contains 15 items measuring simple recall. The Letter Recognition Skills are measured by seven items testing knowledge of letters and words. The Number Comprehension domain contains nine items measuring knowledge of simple counting skills to concepts of quantity and order.

The Adjustment scale contains 55 items grouped according to four scales of Immaturity, Hyperactivity, Behaviour Problems and Emotional Problems which have been observed to threaten general school learning and performance. The Immaturity scale contains 18 items reflecting ways in which a child behaves immaturely as a function of psychological adaptation. The Hyperactivity scale contains eight items describing behaviour typical of hyperactive children. The Problem Behaviour category contains 20 items describing behaviours related to anger, rebelliousness, aggression and anti-social problems.

The Emotional Problems category contains 11 items describing patterns of adjustment involving anxious, depressed, timid and withdrawn behaviours associated with diminished academic performance. Whereas the Behaviour Problems scale describes behaviours that are problematic to other people, the Emotional Problems scale describes behaviours that are a problem to the child.

Problem Symptoms has 15 items describing motor, language, somatic and sensory symptoms. These items provide additional clues for developmental, psychological, physical or sensory problems. Some items describe the negative side of development, while others deal with physical or psychosomatic symptoms and sensory deficits. Four items describe deficits in gross- and fine-motor behaviour. Five items describe difficulties in speech articulation and expressive language development. Four items describe problems related to eating, sleeping, pain and energy. Sensory symptoms are represented by two items describing possible difficulties with hearing and vision.

Rationale for the Minnesota Preschool Inventory (MPI)

Choice of the MPI satisfies the requirements of a detailed description of children's development and functioning; it evaluates the whole child. The description of physical, social, cognitive, emotional; self-help and academic skills provide information required by parents, preschool, school teachers and other child-care givers in Tanzania. When the instrument is ecologically validated, reliability established and made appropriate for studying early childhood development and learning in the Tanzanian family and school cultures, parents, early childhood educators and early child care givers can participate effectively in promoting healthy child development and learning, intervention for handicapping conditions in young children and enhancement of school success during the early years (Ministry of Social Welfare, 1982; CCM, 1987; UNICEF, 1979).

The MPI provides both the child's developmental picture and related problems, thus the information assists in evaluating a child's readiness for school learning. The target study group of children in Tanzania attend preschools where children are expected to be prepared for primary school education.

The MPI, therefore, provides the basis for developing a Tanzania-based preschool, child development and learning instrument through involvement of people close to children. The instrument's broad coverage of the child's developmental domains and potential problem symptoms ensures that the evaluation of children's developmental progress provides a complete picture of developmental strengths and weaknesses.

The MPI does not demand complex skills for its administration and scoring. Training people to use it in interviewing those in charge of young children or helping parents to monitor their children's developmental progress and problems is easy. The problem of skilled personnel which seriously limits research in developing countries is thus minimized. Subsequently, the involvement of parents, teachers and others involved in everyday interactions with young children in systematic observations of developmental behaviours under minimal expert guidance reduces the demands for financial resources and ensures continuation of inexpensive child development research in the future.

The Home Observation for the Measurement of Environment (HOME) by Caldwell and Bradley (1979)

Two HOME observation scales, one for children from birth to three years of age and the other for preschool children three to six years of age, were developed for assessing the diverse types of stimulation found in homes. The early childhood scale describes aspects of early have environments in terms of frequency and stability of adult contact. The scale also explores the amount of developmental and language stimulation, the emotional climate and freedom of movement and activity (i.e. avoidance of restriction of motor and exploratory behaviour). Further, need gratification, types of play materials available and the home characteristics indicative of parental concern with achievement are examined (Caldwell & Bradley, 1979).

The preschool HOME assessment inventory was developed along similar principles but with additional coverage of the skills related to school achievement. The central objective of both the early environment and preschool inventories is to provide a dynamic home process explanation to complement the broad socio-economic status explanations. Maternal education, maternal occupation, paternal education, paternal occupation, and the amount of home crowding are thus compared with process variables of the home environment to reflect the dynamic child environment transactions and its effects on development and learning.

Both inventories are intended to identify home environments enhancing or inhibiting child development and learning. The instruments are used most often in homes thought likely to impede or foster cognitive development and thus suggest supplemental stimulation where required. Both the original HOME and the MPI versions ensured the capacity to screen by including maximally sensitive items for detecting adverse environmental conditions and family responsiveness to children's needs (Caldwell & Bradley, 1979).

The preschool HOME Inventory (see Appendix B) consists of eight scales with a variable number of items. The scales include: Stimulation through Toys, Games and Reading Materials (11 items); Language Stimulation (7 items); Physical Environment: safe, clean and conducive to development (7 items); Pride Affection and Warmth (7 items); Stimulation of Academic Behaviour (5 items);

Modeling and Encouragement of Social Maturity (4 items); Variety of Stimulation (9 items); and Physical Punishment (3 items). Both the MPI and the HOME inventories contain a total of 203 items all scored YES or NO indicating the existence of the objects, situations or the attainment of a particular skill as reflected in the child's performance of some activity in his/her environment.

Rationale for the HOME Inventory

The HOME Inventory broadens the picture of the child's development through detailed examination of the home environment context. Aspects of the frequency and stability of child-adult contacts are examined in terms of language stimulation, the emotional climate of the home, freedom of movement and activity, freedom of exploratory behaviour and stimulation of intellectual and academic behaviour. Choice of the HOME Inventory for describing children's family environment in Tanzania was based on its broad coverage of environmental process variables and their relationship to overall child development and learning.

The HOME Inventory presents a whole picture of children's family and surrounding environments in terms of available resources for enhancing development and learning. The instrument is also easy to administer and score. Thus, training of parents and other individuals involved with children is uncomplicated. As a result, modification of the HOME Inventory to suit the Tanzania cultural environment would create an instrument which does not demand complex skills to administer and score, thus making it readily available for parents and teachers. Despite the advantages of adapting the MPI and the HOME for studying preschool childhood development and functioning and transactions within the home environment in Tanzania, there are both theoretical and practical problems involved in adapting foreign research instruments to developing countries.

Problems Encountered in Modification and Adoption of the MPI and the HOME for Tanzania

Underlying Theoretical Assumptions

The MPI and the HOME were adopted with full understanding of the assumptions underlying theories of child development in Western societies. The instruments assume that the respondents come from a background where the nuclear family is the norm, parents have attained a degree of literacy, children grow up surrounded by examples of modern technology even in the poorest homes, and where parents participate in a structured manner to promote the development and learning of their children (Siann & Ugwuebu, 1988).

In Tanzania, however, families tend to be extended rather than nuclear; most children live in homes with several significant adults and relatives. Families may provide rich social and emotional security but lack structured cognitive stimulation programs because the parents may be illiterate. At the same time, the society may view human development as wholistic process therefore development of specific domains may not be of principal concern (Curan, 1984; Jahoda & Lewis, 1988).

Child development in Western theories focuses on the individual as the centre of activity, succeeding or failing on the basis of self-initiative. The virtues of competition are instilled in children from early childhood. Norms have thus been evolved upon which individuals' successes and failures can be measured. Studying child development and learning in Tanzania must consider the psychological consequences of membership in a collective and extended family (CCM, 1987; Omari, 1982; Siann & Ugwuebu, 1988). Greater emphasis is placed on the furtherance of group values and social cognition for harmonious relations with others than on abstract knowledge acquisition. Contrary to the Western emphasis on structured child-adult educational interaction and tutoring, younger and older children spend more time playing and interacting with one another than with adults (Durojaiye, 1976; Heron & Otaala, 1982). The concept of children caring for each other and of older children caring for younger ones is firmly rooted in many African cultures (Héron & Otaala, 1982).

Summary

The influence of the home environment on early childhood development and learning has been analyzed through family SES and family process variables. The family process variables analysis emphasizes the understanding of the complex transactions between the child and the different aspects of the family environment (Cox, 1987). Whereas SES analysis produces general explanations of the influence of the home on child development, the process variables approach examines the interrelationships in detail, thus facilitating identification of positive and negative effects (Gottfried, 1984).

The review has presented parental education, family income, occupation and family size as the SES variables (Caldwell & Bradley, 1979). Family process variables include the aspects of physical, social and psychological environments and the various ways in which they impinge on early childhood development and learning. Among the characteristics of family process variables are parental/adult involvement in children's activities, family material provisions, opportunities for play and availability of play materials, social, intellectual and affective stimulation, language stimulants and task orientation of the family (Bloom, 1964, Gottfried, 1984).

The literature specifically examined children's acquisition of quantitative reasoning, language/vocabulary knowledge and memory functioning skills presumed important for school learning and success in life (Curan, 1984). The enhancing and inhibiting role of the family environment has been stressed through presenting the positive and negative aspects of that environment. Early developmental problem symptoms have been identified for parents' and child care givers' attention during the preschool period. The role of parental guidance, modelling through verbal and social, cognitive and practical interactions with children has been emphasized. Provision of human and non-human experiences of the external world has been strongly emphasized for variety of experiential richness (Bronfenbrenner, 1979).

Characteristics of normal and abnormal childhood development have been highlighted, especially during the middle childhood period when mild handicapping conditions manifest themselves (Anselmo, 1987). Cross-culturally, adults show concerted interest and efforts to guide, monitor and direct children's activities and thinking (Jahoda & Lewis, 1988; Rogoff & Lave, 1984). Physical, social, intellectual and emotional functioning have attracted adults' attention, especially when children appear to deviate functionally from the societally expected norms or developmental milestones, whether formalized or orally observed (Werner, 1979).

The rationale for early developmental screening and assessment has been implicitly presented by examining the various characteristics of developmentally delayed children. The different functional play-involvement and peer and caretaker interaction limitations have been stressed (Guralnick, 1986). The literature has raised the difficulty of early assessment of non-physical handicapping conditions and has suggested the need for broad-based screening and assessment instruments involving parents and principal child caregivers (Gordon, 1983; Grossman, 1983).

Parents' and teachers' awareness of environmental or familial retardation is heightened by their understanding of the qualitative differences in children's developmental processes involving intellectual and adaptive behaviour functioning. In focusing on the influence of the family on early childhood development and learning, the literature stresses the importance of early intervention by modifying the child's home environment, observed to contribute considerably toward the child's success or failure in later life. The literature has, throughout, assumed that by cooperative efforts between parents, principal child caregivers and child experts in creating favourable physical, social, intellectual and affective environments, both normal and handicapped children could attain higher optimal levels of development (Lazar & Darlington, 1982).

The literature on early childhood research from Tanzania has revealed that children receive a greater variety of social stimulation than intellectual stimulation and the need for balancing the two skills. Adult-child interactions and cooperation need to be strengthened in the family, especially that between adults and handicapped children (Kisanji, 1979; UNICEF, 1979). The need for more detailed early childhood development studies to fill the informational and methodological gaps has been suggested (Mbise & Kysela, 1989). Constraints limiting effective parent and community participation in early childhood stimulation and intervention have been pointed out (CCM, 1987). The review has also raised the difficulties associated with the identification of various handicapping conditions by parents for the preschool child and teachers for the school child.

The interrelationship of the child's developmental characteristics and subsequent transaction and interactions with various aspects of the home environment have been the theme of the review. Chapter III discusses the interrelationships of various child development characteristics and family environment variables in relation to the ensuing study in Tanzania. The underlying theoretical framework is discussed and research questions are formulated.

CHAPTER III

RATIONALE AND RESEARCH QUESTIONS

Introduction

The objectives of developmental screening and assessment practices in developing countries, although intended to serve both preschool and school-age children through family involvement, differs much from developed countries. Developed countries possess a wealth of basic child development information, knowledge and skills ready for dissemination (Kysela, Mbise & Mboya, 1989; Siann & Ugwuebu, 1988). The parent population in the developed countries is aware of the importance of early childhood stimulation and is sufficiently well educated to utilize existing knowledge and skills of child care (Pfannistiel & Seltzer, 1985).

For developing countries, Tanzania included, research on early childhood development should first create basic information. Basic developmental norms for normal and handicapped children, for example, developmental strengths and characteristics of developmental delays and problems, have to be determined according to the cultural context in which children grow and function. The definitions of normality, abnormality and handicapping conditions as perceived by adults in their cultural context must be understood to avoid imposition of imported definitions (Fryer, 1984).

Definition of Concepts and Theoretical Framework

Definition of Concepts

Developmental screening and assessment have been conceptualized as processes of establishing children's developmental and learning strengths and delays or potential handicapping conditions (Bagnato & Neisworth, 1981; Ireton and Thwing, 1974). Screening involves the process of identifying children at risk for an exceptional condition to provide information to determine future diagnostic action on the condition (Winzer & Rogow, 1987). Screening produces information for establishing incidence and magnitude of handicapping conditions in a population.

Screening and assessment can be conducted concurrently but, normally, assessment focuses on individuals already suspected of a developmental or learning problem. Assessment attempts to determine whether the suspected problem is real, establishes the causes, the direction of the problem, and its developmental consequences (Salvia & Ysseldyke, 1985; Winzer & Rogow, 1987). From assessment information, appropriate plans for remediation and intervention are developed according to the child's developmental strengths and weaknesses or delays. Screening and assessment for developmental strengths and problems facilitate adults' recognition of children in need of special services for optimal stimulation of developmental potentials or intervention for handicapping conditions.

The literature has also defined developmental delay as an observed behaviour or functional characteristic of children who fail to perform expected tasks or manifest behaviour appropriate to the age-norm in a particular context (AAMD, 1977; CAMR, 1978). "Developmental delay" is used to describe general problems in development, especially those likely to interfere with normal functioning and acquisition of normal skills according to developmental milestones.

Developmental delays can occur in any developmental domain at any time before an individual is 18 years of age (CAMR, 1978; Guralnick & Bricker, 1987). The concept of developmental delay has been favoured in the description of handicapping conditions because it lessens the negative stigma associated with similar terms. Developmental delays can be compensated for through appropriate intervention and remedial programs. Attitudinal problems and resistance from parents, especially in Africa, can be modified through the use of positive labels to present children's difficulties.

Underlying the definitions and applications of screening, assessment, developmental delays and the intervention strategies employed are ecological considerations related to the child's environment. The literature has revealed the importance of ecological validity and reliability of imported screening and assessment instruments. Ecological suitability and appropriateness of developmental screening instruments is determined by the extent to which the items/skills or tasks assessed represent the skills/tasks commonly performed/required in the culture in which the children being tested live (Baine, 1988). Ecological appropriateness of a developmental instrument can be determined through comparison of the tasks or skills assessed with those required of normal children at a particular age in various common, cultural contexts.

The ecological validity of the MPI and the HOME in Tanzania refers to the extent to which the items reflect the reality of developmental functioning of Tanzanian children and the characteristics of Tanzanian home environments (Kysela, Mbise & Mboya, 1989). Since skills/tasks assessed in the HOME and the MPI focus on the child's developmental functioning at the ages of five and six years, success or failure to manifest expected skills may suggest the existence of developmental problems in need of further assessment. Children's developmental screening and assessment become viable when the various developmental skills have been culturally established as the norm for children of a particular age in a particular community.

Issues and Relationships of Variables in the Study

The review of the literature has highlighted the characteristics of both normal and handicapped development, especially for children at risk for handicapping conditions in the Western family. The characteristics of a child's family environment that may influence the rate, level and style of development (Caldwell & Bradley, 1979) include availability of toys, games, reading and play materials, language stimulation, conduciveness of the physical environment, parent-child affection and warmth, stimulation of academic behaviour, provision of social models, availability of a variety of stimulation and the type of discipline practiced.

In the present study, attempts were made to determine what potentially influential variations existed in family environments and interactions with children in Tanzania. Some of the differences between Western culture and Tanzanian were thought to have influenced family attitudes and expectations toward children's performance, and parental attitudes toward provision of educational and play materials (Mbilinyi, 1984). Differences were also thought to relate to methods of assisting children with both material and informational needs, motivating them to learn and explore the environment, and to visit people and places together. Encouragement of children to express themselves through story-telling and narration of events may also be important. Similarly, resources in terms of parents' ideas on their children's abilities as they assign them duties and responsibilities might facilitate the development of self-confidence.

Another aspect of the present study concentrated on the child's developmental functioning as observed by the mother, the principal care-giver. Parents have become an important source of developmental information related to their children and their children's learning problems (Ireton & Thwing, 1984). Mothers have been especially credited for invaluable knowledge of their children's development and learning during the early preschool years. The family environment impacts on this preschool development both quantitatively and qualitatively through the material and psychological atmosphere provided to children (Gottfried, 1984).

Since the quantitative and qualitative differences becomes apparent when age-related developmental observations are conducted, the analysis was designed to focus on the pattern of developmental functioning as reflected in five and six year olds. It was expected that older children would demonstrate a higher functioning level in both quantitative and qualitative dimensions. As a result of maturation and accumulated experience, older children can process more information, can establish more connections between facts, events and ideas, and can remember and recall more facts than younger children (Siegler, 1986).

In the present study, differences in children's functioning were also expected to be influenced by greater nursery school emphasis on mastering the school related skills for older children than for younger ones. At home, parents and older siblings tend to work much more closely with the six and seven year olds than with younger children (Héron & Otaala, 1982; Omari, 1982). Older children have the advantage of being physically, socially, intellectually and emotionally more mature. Their linguistic ability helps them to sustain conversations with adults. Subseqûently, older children command and receive more attention from adults as a result of monitoring activities, regulation of behaviour, maintenance of discipline and the administration of punishment. Fathers exert significant influences on children's appropriate role development, assignment of family responsibilities, discipline, guidance and punishment during the middle childhood and adolescent period.

The analysis was also desired to explore differences, if any, between boys and girls. The child-rearing practices in Tanzanian families tend to emphasize sex differences in family duties and responsibilities (Mbise, 1986). It was thought that variations in some of the sex appropriate family activities and expectations might produce observable differences between the performance of girls and boys on some of the MPI developmental tasks. Studies (Mbilinyi, 1984; Omari, 1982) have shown that girls tend to work more closely with mothers and probably learn more about the family than boys do. It was expected that girls of both ages (five and six) would outperform boys due to their close association and involvement in the mothers' activities. Tanzanian boys spend most of their time playing in groups outside the house without adult supervision.

If observed, gender differences in the MPI activities would represent the variation in skills brought to school by boys and girls which might positively or negatively influence the process of school learning and achievement. By establishing the competencies children possess at school entry age, parents and teachers could determine appropriate guidance for optimal development and success in crucial early school learning. Through analysis of developmental skills acquired by children in the family and their relationship to school learning, resources to enhance cognitive and affective growth can be jointly reinforced (King & Myers, 1983).

A child's developmental maturity at school entry is important in determining adjustments to peers and teachers. Children capable of adjusting to peers and teacher relations easily may find school learning interesting and easy. Chances for success in classroom learning are greater for children with harmonious relationships in the school.

Temperamental problems reflected in a child's inability to concentrate, restlessness, disruption of others and distractions can inhibit the child's ability to gain from parental and teacher instruction (Winzer & Rogow, 1987). Another aspect of the analysis, therefore, looks at developmental problems and learning delays. Delays have been presented in the literature (Guralnick, 1987) as abilities or skills normally expected to have been acquired by children at a particular age but which, due to either personal or environmental causes, have not been learned. The skills or stages are, however, expected to be attained at a later period.

In the final analysis, three types of problems were examined: those associated with general developmental functioning, school-related learning delays and environmental (family) deprivations (Ontario Ministry of Education, 1978). Problems related to various difficulties (vision, hearing, speech) generally impair children's general functioning and particularly school learning.

Sensory problems could also present difficulty of identification when they exist in mild forms during the preschool years because they often do not surface until a child becomes involved in academic work during the school years.

The framework of the study also includes three specific developmental skills found to be strongly related to school learning. Even though the acquisition of quantitative skills, memory functioning and vocabulary (language) skills were included in the MPI and the HOME, it was important to verify the mothers' reports with some vocabulary, memory and quantitative reasoning tasks involving children.

The literature review has indicated that three types of variables in the child's environment encompass many family environment dimensions, as well as child development domains and symptom problems. The variables constitute the intra-personal, interpersonal, and the family and neighbourhood environment which act in unison to enhance or inhibit early childhood development and learning (Alexander & Entwistle, 1988). The present study intended to explore the relationships existing among children's family environments and children's developmental functioning. The relationships among the subscales in each inventory will be analyzed singly and then across the two instruments.

The interactional and transactional approaches are adapted in this study as an umbrella to encompass the various subscales of the MPI, the HOME and the child's personal characteristics. The models also encompass both social forces and the individual child characteristics leading to developmental functioning and learning. The general objective is to understand how preschool children in Tanzania interact with the family environment and subsequently acquire functional characteristics and abilities expected by the culture. At the heart are materials and the psychological opportunities accorded to children by their families and the manner in which they utilize them. Lack of these materials and the psychological opportunities may precipitate developmental delays and learning problems.

The framework emphasizes the role of the child as an active individual to whom the family environment provides the opportunity for self-actualization to take initiative, direct themselves and to develop self-confidence, essential ingredients for children to maximize their effective involvement in the expected roles. The process involves interactions and transactions with significant others, parents, grandparents, siblings and friends.

Theoretical Framework

Two interrelated theoretical positions underlie the relationships of variables in the reviewed research on the importance of the early home environment of normal and delayed child development. The first position holds that child development occurs through the interactive and transactional processes of the home environment and the child (Gottlieb, 1983; Sroufe, 1979a). The interactional and interactive views assume that children are active agents of their own development (Magnusson, 1988). Mutual transactions between children and their social and care-giving environments help them to understand the environment and themselves. Children's developmental characteristics are unseparable from the care-giving environments which provide material and psychological stimulation.

Children cannot be separated (studied) apart from their total environment. Their behaviour and understanding of self are influenced by their families, their physical environments, their social environment and their personal temperaments. Parents can modify poor environmental conditions in families to promote children's developmental activities and initiative. Consequently, parents and teachers have an important responsibility in shaping children's perceptions of themselves, through modification of the environment, to promote mastery and optimal development and functioning.

The second theoretical view developed by Bronfenbrenner (1979, 1986) examines the influence of the family on child development in the broader context of society's structural and functional interrelationships. According to this perspective, both intra-familial and extra-familial factors (neighbourhood, the school, parents' work, etc.) influence child development. Focus on the family as the context for human development must therefore consider the influence of the intra-familial and extra-familial processes, especially their structure and the manner in which they exert influences on the family.

Bronfenbrenner and Crouter (1982) consider development (change) to be a product of two processes comprising of change over time with the person and within the environment. Essentially, the study of development should be an analysis of the dynamic interrelationship between the two processes (the chrono-system approach). The use of the chrono-system approach for studying human development permits an examination of the influence on the person's development of changes and continuities over time in the environment in which a person lives. The ecology of human development in the family should thus be studied in the broader context of process-context and person-process-context models founded on the intra-familial and extra-familial factors (Bronfenbrenner & Crouter, 1982).

Bronfenbrenner therefore focused child development studies on the complex interacting social fields in which children are located in society. The fields constitute micro-systems of the home and school, the macro-systems of the community within the sub-cultures and culture. Employing this approach in investigating children's developmental characteristics and functioning, and the influence of the home environment, the micro-system of the home was examined in terms of the various activities and responsibilities that children perform, and the social and emotional interactions with adults. An examination of the micro-systems in children's schools was done in terms of patterns of friendship formation, classroom organization, and teacher-child interactions.

The links between the family micro-systems in terms of relationships with siblings and cousins at home affect and interact with children's social relationships with peers. The micro-systems of the family and their interrelationships were examined within the context of the macro-systems involving values and attitudes of the community and the culture, such as friendship, achievement, motivation, cooperation and responsibility in terms of the general community's social interaction as a whole. The extent to which a child is an active agent is entertained and cultivated by adults.

With reference to Tanzania, the Ujamaa (family brotherhood) principles (Nyerere, 1967, 1974) underscore the transactional and the ecological complex of interacting social networks which govern child-rearing practices, socialization and family and community relationships. The emphasis is on furthering the social goals of living and working together for the benefit of all people, sharing both successes and failures, concern for human well-being, cooperation and commitment to serve diligently. An individual's success and well-being is determined by that of the group within which he or she works and contributes.

It is on the basis of the underlying societal emphasis on determination of social positions individually occupied, that Pederson's views on the underlying principles of Western psychology and alternatives from other societies need to be taken seriously. Similar views stipulating that all societies strive to understand and explain human activity and consciousness at all times (Pederson, 1979) prompted Mogghadam and Taylor (1986) to suggest a six-point evaluaation criterion for adopting Western psychological theories and practices for Africa. The criteria should: (a) increase the African's self-reliance on indigenous human resources to define and develop concepts; (b) meet need responses (i.e. being sensitive to differing needs of developed and developing countries); (c) be culturally compatible with life realities; (d) be able to be accommodated within existing situations and institutions; (e) be economically suitable for the developing country; and (f) be politically practical (i.e. should be functional within existing ideology of the society).

The present study examined closely the micro-system of Tanzanian homes. The system was viewed in the context of the interaction with the macro-system of the child (rearing patterns) and in terms of implicit cultural values on children's activities, adults understanding of children's developmental functioning and provisions and stimulation of the family environment. The home environment was studied from the adult-child interaction patterns and the manner in which these dimensions influenced normal and abnormal child development at home and at the preschool level. To do this, the factors of the child's functioning, delineated in the MPI (Ireton & Thwing, 1974), and the aspects of the home environment, delineated in the HOME Inventory (Caldwell & Bradley, 1979), were used. The interrelationship of MPI and HOME Inventory with children's quantitative reasoning, language development and memory functioning were also examined.

The present study assumed that children's acquisition of various developmental skills is determined by the child's activity, provisions of the home environment and by adult-child interaction in the family and neighbourhood environment (Bronfenbrenner, 1979, 1986; Magnusson, 1988). An understanding of the relationship between family process variables and the child's developmental functioning for parents and teachers in Tanzania is important in several ways. The adults' awareness of the nature and influence of the home environment on early child development will: (a) increase their effective involvement in early stimulation; (b) increase their understanding of child development characteristics of both normal and the handicapped; (c) facilitate the modification of the environment for better development; and (d) maximize their interactions with children.

The direction of operational processes needed to obtain more comprehensive and broad information about children and family environments necessitated selection of detailed research instruments covering the major areas of child development and the home environment. The literature revealed problems associated with laboratory studies of young children and the attempts to alleviate them. Bronfenbrenner's (1979) ecological approach to child development was considered appropriate for contextualizing the data collected from parents through the MPI, the HOME inventories and the interviews.

Research Questions

A complete picture of children's developmental functioning and the characteristics of their home environment would therefore be acquired through conducting in-depth interviews into parental understanding of children's development, the characteristics of the home, parent-child interactions and the place of the child in the family. The information obtained from parents would need to be related to data collected through standardized instruments, for example, developmental inventories or observations, for validation purposes. Further, detailed analyses of the data would need to be conducted to identify family processes that contribute to optimal child development and processes that hamper growth.

In the final analysis, the findings should be compared to the evidence from the literature in general, and in particular on the state of children's current developmental functioning. The comparison would also highlight children's home provisions/stimulation in terms of activities and parent-child-environment interactions in which development and learning take place. The analysis should ultimately increase parents' and educators' understanding of children's current developmental strengths and weaknesses, as well as the factors that enhance or inhibit development in the family environment.

The ultimate goal of this investigation was to identify screening and assessment instruments which would describe children's developmental functioning and the home environment sufficiently to suggest negative aspects likely to indicate the presence of handicapping conditions in both preschool and young school age children. Such instruments should specify aspects of children's strengths and weaknesses and environmental richness or poorness to serve as a basis for stimulation and intervention programs.

Five research questions guided the study:

1. What developmental and functional characteristics were observed in five and six year olds in the family? Do children's performance from the five nursery school environments differ? Results will be summarized in tables derived from the seven developmental scales of the MPI. Similarly, developmental problems would be derived from the four MPI problem symptom scales.
2. What provisions existed in the family environment for promoting various aspects of child development and learning? Results of the HOME scales are presented in tables summarizing means and standard deviations. The test score means obtained are presented graphically and a test of the significance of the differences between the means is administered as necessary.

3. Do the two inventories differentiate: (a) children's developmental functioning; and (b) the characteristics of the family environment?

4. Are the two inventories valid for exploring ecological validity of Tanzanian children's developmental functioning and the characteristics of the family environment? The correlations between the subscales of the two inventories will be compared with the vocabulary, quantitative reasoning and memory functioning subtest results. Interview information will also be examined according to the various aspects of the two inventories.

5. To what extent does the family help the child to develop school related capabilities? Results of the MPI, the HOME Inventory, the three tests and interview information will be examined together in summary according to language stimulation, quantitative reasoning stimulation and facilitation of memory of events in the family.

CHAPTER IV

METHODOLOGY

Introduction

This study was designed to screen and assess developmental and learning delays among young school-age children in Tanzania. Children's current level of developmental functioning and the influence of the home environment were examined to determine children's developmental strengths and the presence of potential problems. The study specifically endeavoured to assess children's developmental functioning as perceived by parents, especially the mother or principal care giver. The contribution of children's family environments to early childhood development and acquisition of school-related skills was explored in terms of quantitative reasoning, (language) vocabulary mastery, and memory development. These skills are generally considered important in everyday functioning and emphasized in school subjects (Alexander & Entwistle, 1988; Scribner & Cole, 1981).

The overriding purpose of the study was to assess the appropriateness for developmental screening and assessment in Tanzania of two preschool child development instruments: the Minnesota Preschool Inventory (MPI;

Ireton & Thwing, 1974), and the Home Observation for the Measurement of Environment (HOME; Caldwell & Bradley, 1979).

To explore developmental functioning and learning among children, the MPI was used as a guide. The HOME was used to assess the characteristics of children's family environments. In addition to parents' observations of children's use of number skills, language manipulation and memory functioning in everyday activities, children's knowledge in language (vocabulary), quantitative reasoning and memory functioning were tested using tasks related to their environment to obtain a realistic picture of their functioning. Results from the three subtests were expected to validate parental responses on the inventories. The study employed a cross-sectional design involving children aged five and six years and their parents, mainly mothers.

This chapter describes the preschool centres, family characteristics, the participants, research materials, instruments and procedures as follows: (a) characteristics of nursery schools and organization; (b) participants: families and children; (c) preparation of research materials; (d) reliability of the MPI and the HOME; (e) reliability of Kiswahili versions of the MPI and the HOME; (f) research design; (g) validity of the study; (h) procedures: administration of the inventories and tests; and (i) data analysis methods.

Description of Preschool Centres, Family Characteristics and Participants

Characteristics of the Nursery School and Organization

The five participating nursery schools varied in size, quality of teachers and material resources. Basic to all of them was the general lack of well-structured early child development and educational programs, developmental activities, untrained preschool teachers, except a few, including the head teachers. The activities emphasize learning of social skills and minimal cognitive stimulation.

The management of preschool centres in the country has not been formalized yet, even though directions from the Ministry of Education exist for guiding individuals and organizations. Financing and management of preschool centres falls within the responsibility of private organizations, religious groups, non-governmental organizations, government and party affiliated organizations, private individuals' "family nurseries" and parent groups. Parents provide a major portion of effort in starting, staffing, financing and managing of preschool centres in the country.

The majority of teachers are untrained in early childhood education techniques and early child development characteristics. The teacher-child ratio in the various centres varies from 1:40 to 1:50. In the five centres, the teacher-pupil ratio was 1:40 on the average because these happened to be among the popular preschool centres in their locations. The majority of the teachers were primary school leavers, a minority of whom had three to six months training in the Montessori preschool skills. The five head teachers selected had each received a six-month residential training course in early childhood methods and child psychology.

The government is currently in the process of formalizing the training of early childhood teachers to be employed by the proposed country-wide day-care and preschool system. The Day-Care Act (1982) and the early childhood care and education policy proposal (1986) stipulates the basic requirements of a day care and a nursery school centre, including staff qualifications.

The Nursery School Day in Tanzania

Whether in the urban or rural settings, children attend the nursery school for about three to four hours per day for five days a week. Activities generally consist of cleanliness of body and the environment, parade and physical exercises, story telling and listening, activities related to the "three Rs," learning about the environment, discipline and good manners.

In the urban settings, children are generally accompanied to school by an adult in the morning and collected again at noon. Teachers emphasize safety behaviour while children are in the nursery compounds. All the nursery school environments are considered safe in terms of regulations related to child care and children's movement in and around the compounds. Teachers take great care of children while in the compounds and parents or relatives care for them outside the nursery school environment.

It is imperative at this point to emphasize that the preschool settings in Dar-es-Salaam, and in Tanzania in general, cannot be compared to a preschool centre or day-care centre in economically more developed countries. The motivation for early educational achievement is just beginning to emerge among some urban and rural parents. Emphasis on social behaviour and discipline in young children and adults is considered a priority in the society (CCM, 1987). Thus, stimulation of cognitive development greatly depends on children's learning from encounters with common objects and activities found in the home and surrounding environments.

Language development and communication in general are not emphasized as special skills. Unlike the preschools in Western societies, the availability of materials such as books and activities structured for promoting language, speech, communication, numeracy, reading and drawing are still very limited. Therefore, both context and operation of these nursery schools should not be compared to the typical preschool or day-care in Western society, even though some of the activities and practices may appear to be imitations of early childhood education and development from the Western culture.

Academic skills are generally emphasized for older children aged six and seven years, while younger children spend most of their time in informal, ~~unstructured~~ play activities and little adult guidance. Good manners, discipline, respect and cooperation with other people are generally emphasized for all age groups.

Selection of Preschool Centres

The five nursery schools (see Table 4.1) were selected after visiting over 30 nursery school centres in the city and its suburbs. The quality of facilities, staff, materials and activities in a few centres was too high in some and too low in others to reflect realistically the expected and attainable future preschool standards. At the same time, some preschool centres, both in the city and its suburbs, performed more baby-sitting functions than promoting activities for child development and learning. Extreme cases were thus eliminated, four very high quality

Table 4.1

Population of Preschool Children by Age and Sex in the Five Nursery Schools (July – November, 1988)

		Age in Months								
Center	Sex	48	54	60	66	72	78	84	90	Totals
(A)	Boys	7	7	9	12	7	9	8	0	59
Mlimani	Girls	4	6	11	6	8	10	7	0	52
(B)	Boys	8	5	10	27	12	9	8		80
Lady Chesham	Girls	6	4	14	18	11	6	5		64
(C)	Boys	2	5	13	12	3	20	9	6	70
UWT Hostel	Girls	8	0	7	10	10	7	9	9	60
(D)	Boys	12	15	30	6	16	4	15	11	109
Upendo	Girls	17	8	12	4	13	6	12	9	81
(E)	Boys	7	4	9	3	8	5	1	3	40
Mtoni CCM	Girls	7	4	8	7	6	9	2	1	44
Study Population		78	59	123	105	94	85	76	39	659

centres and eight low quality centres. The five centres were thus selected from the 18 remaining centres.

The head teachers' background training and experience was another factor considered in the selection process. Since the major part of the research involved the teachers in visiting families, especially interviewing mothers on their knowledge of child development and functioning, the teachers' experience and training were vitally important. The teachers' familiarity with children at the centres and with parents at home was expected to facilitate parents' positive response and cooperation.

During the preschool registration period, parents took their children to the teachers to confirm the children's birthdates and any special problems to which the teachers should pay attention. Frequent contacts between preschool head teachers and parents also existed. The five centres, therefore, represented preschool characteristics that could be attained in the proposed country-wide preschool system as they approximate activities already present in some rural preschool centres. As for the developmental and functional characteristics of children, comparability would depend on future extension of the research with other urban and rural children in the country.

The five head teachers of the selected preschools had teaching experience with preschool children ranging from four to six years and had led the current centres for at least two years. They had good understanding of early childhood development and education through attending a six-month training course at the Montessori School in Dar-es-Salaam and as a result of their work experience with children.

It was anticipated that the teachers' training and experience would enable them to detect children with behaviour, social, physical and intellectual difficulties through observation at the centres. Furthermore, the teachers, except for one, were also parents. Due to the research focus on the child and the family environment rather than at the preschool, the teachers became an important factor in determining centre selection.

The teachers' background and training experience, familiarity with children's characteristics and problems would, first, enable them to understand the requirements of the two parent-child study instruments more quickly and clearly. Second, the experiences would make their training for the research easy; and, third, being women and familiar with the parents (mothers), they minimized problems of acceptability by the families. Fourth, being experienced and knowledgeable with young children, they could explore and record activities and behaviour in children's homes accurately.

Environment of the Selected Preschool Centres

Two nursery schools, Lady Chesham and Buguruni, both managed by religious organizations, had enclosed compounds, spacious for Lady Chesham nursery and very limited space for children's activities at Buguruni. Limited physical play facilities were available at Lady Chesham nursery and none at Buguruni.

Large play areas were available at UWT Hostel nursery and Mlimani, but few play facilities existed. The Mtoni CCM nursery had no playground available. In general, sandy soils characterize most of Dar-es-Salaam coastal environments, thus the compounds of these nursery schools were generally sandy.

All five nursery schools were housed in different sized buildings, some partitioned for classes and others unpartitioned. Two nursery schools mixed all the children aged 3.5 to 7.5 years in one room. The other three centres had two rooms for classes, one for children aged 3.5 to 5 years of age and the other for 5.5 to 7.5 years of age. Space availability limited the number of children admitted to each nursery school; for primary school preparation, preference was given to 5 to 7 year olds.

The classroom walls were generally bare. Pictures and other learning materials, mostly prepared by teachers, were only used in the classroom during the teachers' presence. Children's picture and reading books were scarce. Each parent bought exercise books and pencils for their children, in addition to paying a nominal monthly fee to supplement teachers' salaries and to buy snacks for children. A few parents managed to buy some picture books and educational toys for their children. Overall, however, the nursery schools had a variety of teacher-prepared teaching materials developed from practicals during their training programs from early preschool institutions.

Participants: Families and Children

Characteristics of Families

Dar-es-Salaam families differ in size, education, wealth, occupation and residential locations. The families participating in the study differed to some degree on these variables. Children and their families were randomly selected through a table of random numbers after obtaining a list of all children aged 4.5 to 6.5 years from each of the five nursery school centres. The selected schools were located in various sectors of the city with some general homogeneous characteristics. For instance, participating families in a particular location were generally comparable to one another with respect to education, occupation and availability of family resources.

In families whose children attend Lady Chesham (St. Peter's) Nursery School, for example, the majority of fathers had secondary to university education, and the majority of mothers had secondary education. These families lived in the Oysterbay and Upanga areas of the city, a relatively affluent sector in comparison to other areas of Dar-es-Salaam. Families with children at Umoja wa Wanawake Hostel, Nursery School, had more variable characteristics. Although the majority of these children come from well-educated families with secondary education, some families had only primary education (seven years of schooling) and were living in heterogeneous residential areas around Kinondoni, Muhimbili, Mwenge and Kawe where family fortunes were also varied.

The Upendo-Buguruni Nursery Centre was located in a high density population area of the city. As expected, the majority of fathers had secondary education (eleven years plus of schooling) while the proportion of mothers with secondary education was smaller than those in the Oysterbay area. The majority of mothers had seven years of primary education. The residential conditions were predominantly shared housing, while most of the Oysterbay-Upanga families lived in independent houses surrounded by spacious compounds.

The families in the Buguruni area lived in close quarters shared by several other families. In such living environments, adults and children from different families shared most of the facilities such as kitchens, washrooms, bathrooms, yards, play materials, playgrounds and even rooms.

The Mlimani Nursery School was located on the University campus. Children came from the surrounding locations but the majority came from university campus families. Most of the university families lived in independent housing units. The majority of fathers had university and secondary education while the majority of mothers had secondary education and a few had primary education. Generally, there was nothing special about facilities and staffing of the Mlimani Nursery School compared to others in the study and in the city in general.

The Mtoni CCM Nursery School was located in a high density suburb of the city. Generally, parental education, occupation, income and housing were comparatively lower than that found in the other four centres. Fathers were generally more educated than mothers. More mothers were home-makers than in the other four centres. Mtoni Nursery School was solely supported by parents and a subsidy from the City Authority, while the other four were supported by parents and some public or private organizations.

The five selected centres fell into the middle category of a country-wide preschool centre classification from low/poor, middle and high quality. Quality was defined in terms of materials available for teachers and the children, quality of buildings, type of families in the neighbourhood and teachers' training and qualifications. Within the middle category of these five centres, a further categorization mainly based on available materials for children and teachers and the daily activities at the school placed Mtoni in the low category. By the same criteria, Mlimani, Upendo and UWT Hostel Nursery fell within the middle category, while Lady Chesham was in the high category.

In summary, parental education ranged from seven years of schooling to university education. Table 4.2 summarizes parental education by centre and sex. The table also summarizes the professional distribution of mothers and fathers in general. The table shows that 37 percent of mothers, compared with 19 percent of fathers, had standard seven education. Fifty-one percent of the mothers had 12 years of education, compared with 55 percent of the fathers. At the same time, 12 percent of the mothers, compared to 26 percent of the fathers, had more than 13 years of education. In general, fathers in the sample had more years of education than did the mothers. The mean parental education for the sample in years was 11.5, implying that the majority of parents had more than secondary education.

Comparatively, the percentage of fathers employed in skilled and professional jobs exceeded that of mothers, 76 percent and 64 percent respectively. Twenty-one percent

Table 4.2

Parental Education by Centre and Sex, Profession Category and Income

	Level of Education*							Professional Category		
	Primary		Secondary		University				%	
Centre	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Total		Mothers	Fathers
A	6	0	10	9	4	11	40	I	1	4
B	4	2	12	10	4	8	40	II	64	76
C	6	1	12	14	2	5	40	III	6	6
D	9	6	10	12	1	2	40	IV	8	10
E	12	10	7	10	1	0	40	V	21	6
Total	37	19	51	55	12	26	200		100	100

Scales of Family Annual Incomes based on 1988 Salary Scales for Government Employees:

I 90,000 – 126,000 (Professional and Managerial)
II 72,000 – 90,000 (Skilled/Trained)
III 54,000 – 72,000 (Peasants and Unskilled Manual)
IV 36,000 – 54,000 (Small Business)
V 18,000 – 36,000 (Homemakers and Others)

*Primary Education = 7 years
Secondary Education = 4 to 7 years after Primary
University Education = 3 to 5 years after Secondary

of the mothers were home-makers or self-employed persons, whereas the percentage of self-employed fathers was only six percent. The family income category was influenced by years of education and the level of employment category. The families categorized as low income were 27 percent, while medium income families constituted 54 percent and high income families accounted for only 19 percent. In general, the majority of Tanzanian families would be found between the V to II income categories.

Children

The population of interest included preschool children aged five and six years currently attending nursery schools in the Dar-es-Salaam urban environment. These nursery schools prepare young children for formal primary education commencing at seven years of age. During their three-year preschool attendance (normally the age of nursery school children ranges from 3.5 to 7.5 years), parents expect children to learn to read, write and count in addition to other developmental activities. Therefore, the activity focus for the six and seven year old children attending nursery education in the city was on literacy skills.

For the younger children aged three, four and five years, activities focused on developing motor skills, play, attending to adults' instructions, drawing and language skills. Due to limitations of teachers' skills in child development and scarcity of children's appropriate materials and activities for children, there was little structure and organization in the day-to-day activities for the younger children.

Of particular interest to the study were the activities and materials available in children's home environments which reinforced preschool learning experiences. It was particularly interesting to discover the various ways in which children interacted with parents/adults and the materials at home and in the nursery school environment. Interviews with parents and home observations facilitated the collection of information on children's home background activities and child-adult interaction in the family.

The study focused on children between 4.5 and 6.5 years with a mean age of 5.5 years. The parents gave written consent after the principal investigator explained the research purpose. The contribution of the study to the improvement of early childhood development and learning, particularly ways in which preschool teacher trainers and child psychologists could help both teachers and parents, was emphasized.

The Sample

One hundred boys and girls aged five and six years, equally balanced for sex and age and nursery school, participated in this study. The actual mean ages of the five year olds was 59.6 months for boys and 58.8 months for girls. For the six-year-old children, boys were 72.9 months and girls were 73.6 months. The age differences within each age group were negligible but there were substantial individual differences between the age ranges of 3.5 to 7.5 in one nursery school. Table 4.3 summarizes the mean ages by centre and sex.

Children came from medium to large families due to the extended family norm. Eighty percent of the families had more than three children of their own and two or more persons living in the family. Children spent most of their day time playing outside the family home, except when they were attending nursery schools. Girls tended to spend more time with their mothers or female members of the family and assisted in performing family chores. Boys were mostly left on their own, especially if there were peers in the neighbourhood. Generally, less control was exercised over the boys.

Table 4.3

Mean Ages for Five and Six Year Old Children by Centre and Sex

	Group I: 54 – 66 Months		Group II: 67 – 78 Months	
Centre	Boys	Girls	Boys	Girls
A	59.4	58.2	70.8	73.4
B	62.8	58.6	76.0	72.8
C	57.6	60.2	75.4	72.0
D	56.0	58.4	70.6	74.6
E	62.0	58.6	71.6	75.0
	x = 59.6	x = 58.8	x = 72.88	x = 73.6

Preparation of Research Materials: Conceptual and Practical Considerations

Adaptation of Psychological Instruments from One Culture to Another: Issues for Consideration

The process of selecting and preparing materials for this study involved two options. The first option was to develop completely new research instruments based on the author's knowledge and experience in early childhood development and education in Tanzania. The second alternative was to opt for the adoption of existing child development instruments developed and normed in the Western society. The first option was abandoned in favour of adopting a Western developed instrument due to the limited time factor, expenses and validity of early childhood research instruments from Tanzania.

A number of issues, both theoretical and methodological, needed to be considered to ensure usefulness of adopted psychological instruments in the target culture. The purpose of this section is to identify these issues briefly and then develop them later in the appropriate sections of the study. The first issue involves the formulation of an appropriate conceptual framework. Appropriateness in this context means that the framework should explain the relationships among variables of the study through meaningful illustrations of behaviour or activities from the target culture context (Baine, 1988).

Psychological instruments or tests developed in one culture carry underlying assumptions of socialization and child-rearing practices that may differ with practices in another culture. Theoretically, a child's development and functioning are significantly influenced by experience in a particular socio-cultural setting. The experience may be optimal or sub-optimal, thus affecting the course of normal development and learning. Before psychometric instruments are adapted from one culture to another, the cultural context of the instruments and that of the target culture must be considered critically. Language issues and conceptual equivalence of the scales and items must be considered and evaluated (Hulin, 1987).

Methodologically, issues of reliability and validity of the psychological instruments must be verified (Salvia & Ysseldyke, 1985). With translated versions, problems of psychological equivalence of concepts and ideas may be affected by failure of translations to accommodate local expressions and customs (Howard & De Salazar, 1984). Psychological translations should thus be verified through back-translations by independent bilingual translators, and use of statistical techniques to establish generalizability of the scales and items (Hulin, 1987).

Technical methodological considerations involving re-establishment of reliability and validity of the translated versions must be undertaken. Validity, the most important characteristic of a psychological instrument, refers to the appropriateness, meaningfulness and usefulness of the inferences made from psychological data. Both content and construct related evidence in terms of psychometric equivalence and semantic meaning is required.

Evidence is required to ensure that the adopted instrument assesses reactions to cultural events and processes or behavioural intentions in situations involving the target language and culture. The instrument administration procedures, particularly, must consider peculiar cultural differences related to cultural practices (Harkness & Super, 1977). Examples are child training for independence versus dependence, language production versus comprehension, obedience and conformity versus freedom and creativity.

Modification of imported developmental assessment instruments has been achieved in various ways (Baine, 1988): (a) omissions of inappropriate items; (b) modification of inappropriate items to make them appropriate to the new cultural setting; (c) allowance of additional practice time or modification of instructions; and (d) in some cases, scoring of tasks may be adjusted to account for intervening factors such as lack of practice or test traditions. The conceptual and methodological concerns raised in this section will be discussed in detail under sections on inter-observer reliability training, instrument reliability and validity and factors affecting the internal and external validity of the study.

Selection and Preparation of Materials

All the materials for the study were prepared while the author was at the University of Alberta. Various research instruments in early child development and learning were studied critically. After considering the underlying assumptions, the administrative demands and the socio-cultural reality of the Tanzanian environment, three types of instruments were selected. The Minnesota Preschool Inventory (MPI)(Ireton & Thwing, 1974) and the Home Observation for the Measurement of the Environment (HOME)(Caldwell & Bradley, 1979) were selected for exploring children's developmental functioning and their interactions with their home environment as perceived by parents and other caretaker adults. The rationale for the selection of these instruments has already been provided in the literature review.

The second set of research instruments constituted a selection of Vocabulary, Quantitative Reasoning and Memory subtests from Binet (1984) version for young children. The vocabulary subtest was selected to test children's knowledge of names of common objects within the home environment. The quantitative reasoning subtest was used to explore children's knowledge of number concepts related to their everyday functioning and the memory subtest was used to test children's memory functioning in relation to visual manipulations and auditory instructions. Children with developmental delays in these domains were also expected to be identified.

The immediate significance of these tests to the study was to verify, through confirmation or contradiction, the parents' responses on the developmental characteristics of the MPI subscales and some aspects of the home environment on the HOME Inventory. If significant correlations could be established between the MPI subscales and the HOME subscales with the three subtests, then validity of the inventories would be ascertained empirically.

The three subtests consisted of pictures of different objects portrayed in different relationships. Since the children were not yet literate, the testing activities involved looking, listening, observation, manipulating and responding. The three tests were specifically selected for these children because comparable tasks exist within children's environment in Dar-es-Salaam. Picture naming and recognition tasks had been administered to preschool children before (MTUU, 1985; Nyinawumuntu, 1982).

Modifications, especially in instructions, were made where necessary to account for children's lack of familiarity with testing procedures. All the materials were translated into Kiswahili language, the national language of Tanzania. Various documents were utilized during the translations: the English-Swahili Dictionary (Johnson, 1974), "Tafsiri Sanifu" (standard Swahili translations of technical concepts), for various subjects including Psychology, Biology, Mathematics, Physics and Administration/Management (Bakita, 1978, 1980, 1985), Istilahi ya Malezi (Institute of Education, 1984), and a Dictionary of Psychology (Reber, 1988). Frequent reference was also made to primary school Grade 1 reading and arithmetic textbooks and other materials prepared for school-age children in Tanzania. The translations and the appropriateness of the research materials (tests) were further cross-checked by an expert in Kiswahili language and by trained, experienced preschool teachers. The next section presents the reliability and validity of the MPI and the HOME.

Reliability and Validity of the MPI and the HOME

Reliability and Validity of the MPI

The Minnesota Preschool Inventory was intended to identify children's developmental strengths and those at high risk for failure in kindergarten. The instrument developers assumed that mothers knew their children's development, adjustments and symptoms associated with developmental and learning problems (Ireton, Kampen & Lun, 1981). The original Minnesota Child Development Inventory (MCDI) scales from which the MPI items were selected, especially the General Development Scale, had high reliability coefficients in the .80s and .90s, with a median reliability of .90 for the two to six age range.

Validity mean scores showed systematic increase with increase in age throughout the age range (one to six years) for the original MCDI (Ireton & Thwing, 1974). Validity of the MPI has been established through comparing teacher ratings of each child's overall performance to scores on the MPI scales. The results showed that on a five performance classification category ranging from poor performance, below average performance, average performance, above average performance and superior performance, the majority of children's performance fell in the average and above average categories. Significant correlations were observed between the inventory scales and kindergarten performance except in Self Help (Guerin & Gottfried, 1987).

The developmental scales also have predictive validity. The predictive power of the individual developmental scales was obtained by considering the relationship between delayed development on each scale and kindergarten performance (Ireton, 1987; Ireton & Thwing, 1979). Poor performers were mostly identified by Comprehension, Letter Recognition, Number Comprehension and Memory Scales. Self Help, Fine Motor and Expressive Language scales did not adequately identify poor performers (Ireton & Thwing, 1979).

The validity of the Adjustment Scales (i.e. identifying five percent of the children as maladjusted) was in agreement with the developmental scales. The validity of the symptom scales describing the gross motor, fine motor, speech and language, somatic and sensory problems could accurately identify five percent of the children with significant hearing and vision problems (Lichtenstein & Ireton, 1984).

Reliability and Validity of the HOME

Internal consistency and stability of the Preschool Inventory have been observed from various studies (Bradley, 1982; Gottfried, 1984). Internal consistency estimates made by using the Kuder-Richardson 20 Formula produced coefficients ranging from .53 to .83 for the HOME subscales, while the estimate for the total scale was .93.

Results of the HOME Inventory administered to 33 families when children were three and four-and-a-half years old supported stability of the HOME scales (Caldwell & Bradley, 1979). Findings for the eight subscales had coefficients ranging from r = .50 to r = .70. Although these reliability coefficients were not very strong, the authors considered them acceptable due to the number of items in the subscales. Intercorrelations of the subscale results at different age levels, especially three to four-and-a-half years, have produced moderate correlations from the factor analysis (Caldwell & Bradley, 1979).

Validation of the HOME Inventory for families of preschool age children were conducted by comparing home scores with five SES indices: maternal education, maternal occupation, paternal education, paternal occupation and the amount of crowding in the home (Caldwell & Bradley, 1979). Data from the 33 families studied produced HOME and SES score correlations in the expected direction (ranged from .30 to .50). It was surprising to find that correlations between both mother's occupation and father's occupation and the home environment were negligible. These variables would be expected to increase the family's strength to influence preschool children's development and learning. The three remaining SES factors produced moderate correlations with the HOME scales with the highest relationship being observed between maternal education and the HOME subscale Toys, Games and Reading materials (r = .65).

The HOME Inventory has also been compared to cognitive development instruments such as the Stanford Binet Intelligence Test and the SRA Achievement Tests (Caldwell & Bradley, 1979). A comparison of children's HOME Inventory scores at different ages (one to six years) with performance on the Binet and SRA showed improvement from age to age. Significant correlations have also been observed between HOME scores and measures of cognitive development during the early childhood years and the primary grades (Gottfried, 1984).

Stimulation through Toys, Games and Reading Materials, Pride, Affection and Warmth, and Variety of Stimulation correlated strongly with IQ (r = .75). Toys, Games and Materials were particularly important during the preschool and early school period. SRA scores correlated significantly with HOME subscales Stimulation Through Toys, Games and Reading Materials, Language Stimulation, Pride, Affection and Warmth, Physical Environment and Variety Stimulation. The total HOME score correlations ranged from r = .51 to r = .58 with the four achievement test scores examined on SRA.

In the present study, the validity of the translated Kiswahili versions was calculated by computing correlations between the subscale scores on the MPI, the HOME and the three Stanford Binet (1984) tests of Quantitative Reasoning, Vocabulary and Memory Functioning. A comparison of children's performance on the three Binet subtests with mother's responses on the specific subscales of the MPI and the HOME provide supportive or contradictory evidence on the validity of the subscales.

Reliability of the Kiswahili Versions of the MPI and the HOME

Prior to the commencement of training of the teachers for interviewing parents, a brief detailed pilot study of ten families, two from each of the five centre locations, was conducted by the author. The ten families involved in the pilot study were selected together with the sample of one hundred children picked randomly through a table of random numbers. The ten parents were thoroughly interviewed with regard to developmental behaviours and the home environments of their children, focusing on the behaviours identified in the inventories and those not represented on the instruments. The main objective of the study was to determine important behaviour patterns in relation to the domains represented on the MPI and the HOME subscales.

The first part of inter-observer reliability training involved familiarizing the teachers with the MPI and the HOME items through discussions and practice. The second practice session involved teachers administering the inventories to one another and discussing their experiences. The final practice session involved the teachers in administering the instruments to two families who were earlier involved in the pilot study from the respective centre locations.

The coefficients of inter-observer reliability were calculated by comparing the scores obtained by the author and the teachers. The process involved the number of agreements divided by the number of agreements and disagreements on each scale. Total reliability coefficient between the teachers and the principal investigator was obtained by adding up the agreements and disagreements on each scale and the comparing total agreements to the total number of items on the instrument.

The behaviour problem symptom scales on the MPI presented some interpretational problems due to cultural perceptions. For example, a very active child, especially boys, could easily be labelled "hyperactive" by parents, meaning that the child was not as quiet as the others. The procedure of agreements divided by the sum of agreements and disagreements was very useful in providing feedback to trainees regarding specific problem scales and behaviours and thus facilitated further refinement of definition and explanation of the behaviours (items). The approach provided a numerical estimate of reliability and it indicated items disagreed upon most often.

The reliability data reported in Table 4.4 is based on the results obtained from the ten families. The information was collected by five teachers, two weeks after the author had administered the same instruments to the families. Each teacher's results were then compared to those of the principal investigator.

The data show the agreement on the MPI to range from 63.6 percent to 90 percent and that for the HOME to be between 68.6 percent and 97 percent. Mean reliability for the MPI was 81.5 percent and that for the HOME was 86.5 percent. Agreement of 75 percent and above is generally considered to be acceptable. The differences in the subscales mean reliabilities could be attributed to the type of items contained in different subscales of the two inventories.

Design

Cross-sectional Design

"A cross-sectional design involves data collection at a point in time from a sample or from more than one sample representing two or more subpopulations" (Wiersma, 1986, p. 210). The cross-sectional design is widely used

Table 4.4

Results of 10–Family Reliability Study for the MPI and the HOME by Various Subscales

Minnesota Preschool Inventory

	SH	FM	EL	COMP	ME	LR	NC	IM	HY	BP	EM	PROB.SY
Total Items→	21	17	18	34	15	7	9	18	8	20	11	15
Family												
1	19	12	15	27	12	5	6	14	8	12	7	11
2	17	14	16	24	13	7	8	12	6	13	9	12
3	20	15	17	31	15	6	7	15	7	12	8	5
4	18	13	18	26	13	6	5	16	5	14	6	14
5	17	15	14	28	14	7	7	13	7	17	5	13
6	19	14	18	26	13	6	8	17	6	19	8	13
7	21	13	16	29	14	5	6	15	8	18	9	13
8	20	15	17	25	12	4	8	13	4	16	7	14
9	18	14	15	26	15	6	9	14	8	14	6	14
10	16	15	17	29	14	6	7	16	4	16	5	14
Score	185	140	163	271	135	58	71	145	63	151	70	133
Scale Total	210	170	180	340	150	70	90	180	80	200	110	150
%	88.0	82.0	90.0	79.7	90.0	82.8	78.8	80.5	78.7*	75.5*	63.6*	88.6

Mean Reliability = 81.5 percent.

The Home Observatons for the Measurement of Environment

	TGM	LAST	PhyE	DAW	SAB	MSM	VAS	Phy Pun
	11	7	7	7	5	5	9	4
1	10	7	6	5	4	4	6	3
2	9	6	7	6	4	5	8	2
3	11	7	7	4	5	4	9	3
4	10	7	7	5	5	5	7	3
5	9	6	5	4	4	5	7	3
6	10	5	7	6	5	4	8	4
7	11	6	7	5	4	4	9	4
8	8	7	7	4	5	5	6	4
9	10	7	7	5	5	4	8	4
10	10	7	6	4	4	5	7	3
	98	65	68	48	45	45	75	33
	110	70	70	70	50	50	90	40
	89	92	97	68.6	90	90	83	82.5

Mean Reliability = 86.5 percent.

in developmental psychology to chart growth rates, ceiling effects and declines in physical and psychological characteristics (Agnew & Pyke, 1987). The assumption underlying this design is that measures change over time and age (Dyer, 1979); therefore, by comparing change among various variables, relationships among them can be established.

This study employed a cross-sectional design involving 100 families of children aged between five and six years attending preschool education (see Table 4.5). Twenty children, ten from each age group, were selected from each of the five nursery school centres. Each nursery school was equally represented by five boys and five girls from each age group. The one hundred parents of these children also participated in the study. The objective was to interview the mothers, the principal caretakers of children and supposedly the most knowledgeable person about their children's behaviours and activities. Where the mother was not the principal caretaker, the person playing that role was interviewed.

Considering the typical nature of child-care in Tanzania, the role of other adults could not be ignored for children aged five years and older. Parents, grandparents, aunts, uncles and their children commonly live together as part of the extended family.

Table 4.5

Summary of Study Design: The Sample and the Instruments

Centre	Children		Parents	Instruments
	54 to 66 months	67 to 78 months		
A	10	10	20	-The Minnesota Preschool Inventory (Parents) -The Home Observation for the Measurement of the Environment (Parents) -Quantitative Reasoning, Vocabulary, and Bead Memory (Children)
B	10	10	20	
C	10	10	20	
D	10	10	20	
E	10	10	20	
5	50	50	100	

Children's current knowledge of everyday activities and surrounding environment was tested for quantitative skills, vocabulary knowledge and memory functioning through administration of Stanford-Binet, Form IV (Thorndike, Hagen & Sattler, 1986) sub-tests in the three skill areas. The three sub-tests consisted mainly of pictorial materials, visual observations and object manipulation exercises. Table 4.5 summarizes the design.

The three instruments were administered in Kiswahili language. Children's behaviours and the general home environment were observed according to the items on the various scales in the instruments, Parents were interviewed to obtain detailed information on some of the behaviour categories. The next section discusses factors affecting the internal and external validity of the study.

Validity of the Study

The cross-sectional design employed in this study has various practical and psychological advantages and disadvantages. Studying behaviour or a developmental problem cross-sectionally facilitates data collection at a particular point in time (Dyer, 1979; Wiersma, 1986). By minimizing the spread of data collection over extended periods, problems associated with attrition are prevented due to the absence of long-term follow-up required for longitudinal designs (Borg, 1983). Cross-sectional designs are thus convenient and common in educational and psychological studies because they facilitate testing, observation or measurement of subjects of different age groups at the same time. Time and cost are thus saved (Dyer, 1979; Wiersma, 1986).

Despite the advantages associated with cross-sectional design, several problems have to be considered. The first problem involves the fallibility of human memory which affects reliability of data collected on the basis of what people remember (Agnew & Pyke, 1987; Borg, 1983). Distortions are likely to occur in the accuracy of the events recalled depending on time-lapse and the attitudes associated with the events (Borg, 1983; Wiersma, 1986). Mothers involved in this study, for example, may fail to recall the time at which their child reached developmental milestones such as sitting, standing, walking and talking, if the events occurred some years back. Cross-sectional data should therefore be cross-checked by other means. A comparison of the MPI and the HOME results with the three Binet subtests partly satisfied this demand of validity.

Second, results from cross-sectional studies may suffer problems of population generalizability or validity. The validity of the results from a random group tend to be limited to the specific group and the sub-population sampled (Wiersma, 1986). The effects of cross-sectional studies also tend to be limited to the time of observation or measurement, thus time associated changes cannot be determined from such studies. Combinations of cross-sectional and longitudinal designs have often been employed simultaneously to overcome the problem of time-effect generalization (Borg, 1983; Dyer, 1979). As well, two types of validity normally exert influence on any study and must therefore be controlled for the results to be meaningful.

Internal Validity

Studies conducted in naturalistic settings face the difficulty of establishing effective controls to maximize internal validity. Internal validity is the basic minimum requirement for the results of a study to be interpretable (Campbell & Stanley, 1966). Internal validity concerns the effect of treatment (dependent variable) on the independent variable, that is, whether or not the treatment actually produced any obtained effect. The effect or change can sometimes be produced by a confounding factor. Some threats to internal validity in this study will now be examined.

Children were tested in the mornings between 9:00 a.m. and 10:30 a.m. when their attention was supposed to be high to avoid fatigue effects. The inventories were administered to the parents according to their convenience, some in the mornings and others in the afternoons.

However, it is difficult to speculate how much fatigue from parents' daily chores influenced their responses. Due to the objective nature of the inventories, the responses were not expected to vary much, except for the elaborations which depended on the activities and objects available for children in the home.

Observer effects could be an important confounding factor in the study. The teachers acting as research assistants were familiar with the families, particularly the parents. Training for the research had emphasized courtesy to the parents, respect and attention to personal concerns and problems, and reinforcement of parents and their children through showing appreciation for participation and cooperation. Teachers had been cautioned to ensure careful recording of important information, in addition to accurate recording of inventory responses. As a result, more time was spent on administering the inventories than previously recommended. Thus, training was employed to reduce the possible effects of changes on the teachers' skills with the inventories over the course of the study.

For children, the test instructions for the bead memory had been modified by increasing practice time. More practice time than recommended in the manual was required to minimize effects of non-test background tradition among children. Testing materials had been selected to represent common objects, events and activities in children's homes and neighbourhoods. Furthermore, testing was conducted as a form of game in the mornings when children were still energetic and attentive.

The bead shapes were introduced in association with objects familiar to the children to ensure optimal performance on memory tasks. The bead colours were generally familiar and therefore objects with similar colours in the homes were abundant. Children were only tested once, thus the test-retest effect was not expected to affect results.

Changes in the calibration of measuring or research instruments, "the elastic ruler suspects" (Agnew & Pyke, 1987), have been associated with changes in observers, changes in scoring methods or changes in observations. The possibility that the five research assistants in the study scored some of the items differently could not be overlooked. The same variation could influence the recording of the items considered important in the interviews. Since the two principal instruments were scored YES and NO, minimal variations were expected.

The most significant area where differences in scoring could occur was in the interview information. Through training of the teachers on suspected problem items on the inventories and clarification of what to record in the interviews, variations in scoring were minimized. The teachers' familiarity and experience with children and their parents was expected to help overcome problems of respondents' sensitivity to the presence of an observer, thus making the study environment as natural as possible.

The families involved in the study were selected as a random sample through selection of their children at the preschool centre. Selection of children was not based on any performance criteria. Statistical regression, which operates where groups are selected on the basis of extreme scores, would therefore not affect the results of the study. Comparison of parents was not one of the study objectives; rather, they were to describe and explore the nature of interaction between children and their home environments which included parents.

Internal validity of a study is also affected by attrition of subjects or by data loss (Agnew & Pyke, 1987). Biased drop-out of subjects or data influences the direction of outcome effects or significance of the results (Campbell & Stanley, 1966; Wiersma, 1986). The attrition problem was experienced in the course of the study when four children fell sick and had to drop-out. These children were substituted with reserves selected together with the participants at the beginning. Twenty-six children, instead of the required twenty, had been selected at each centre.

The cross-sectional design of the study and the involvement of parent-child group was meant to minimize the selection-maturation interaction which normally affects results in multi-experimental group designs (Borg, 1983; Campbell & Stanley, 1966). Furthermore, the sample was small, making the results amenable to simple qualitative and statistical analyses.

External validity

External validity concerns the generalizability of research results to populations, settings, treatments variables and measurement variables (Campbell & Stanley, 1966). Conditions for external validity cannot be completely satisfied in any study. Control for extraneous factors is, however, necessary to ensure that results apply to specified criteria or situations.

The first external threat to generalizability of results of this study then is representativeness of the sample. The study mainly involved urban parents and their preschool children. Families with some middle-class characteristics which might not compare exactly to the rest of the population were chosen for this initial testing of the usefulness of the instruments in Tanzania. The general characteristics of the preschool centres which formed the basis of family selection were supposed to represent the anticipated, attainable quality of proposed country-wide preschool education by eliminating the extremes of poor and high quality centres from the sample.

Due to the restricted sample selection, the results were, thus, expected to reflect the characteristic relationships of parents, their children, and activities in an urban family setting, especially. Aspects related to child training and parental child-rearing attitudes were expected to be strongly related to the societal cultural norms because of the strong linkages existing between urban and rural population through extended family influence. Urban dwellers still consider themselves a part of their rural families by sending them money, materials, visiting them regularly and vice versa. Major differences between urban and rural families might thus be observed in the types of material opportunities available to children, rather than in child-rearing outlook and expectations.

The reactive or interactive effects, sometimes observed in pre-test/post-test situations where respondents' sensitivity and responsiveness to the interviews change, were controlled for. Teachers were trained to be cautious and responsive to parents' reactions. Courtesy during the introduction of the subject, during the process of discussions, and at the conclusion of interviews was strongly emphasized. Since the visits had been scheduled according to parents' convenience, and since the teachers were familiar persons, variations in parental responsiveness were expected to be minimal.

Generally, the study should have involved children and parents representing various types of families in Dar-es-Salaam; however, sample restriction was necessary in the instrument testing phase. The instruments were alien to the Tanzanian culture, thus step-by-step testing with different types of families becomes essential before embarking on a broad spectrum study. There was uncertainty whether the behaviours represented on the instruments would actually be observed in Tanzanian children and the family environment in general.

Sometimes, samples may under-represent the population of the study. Similarly, the dependent variable selected to measure behaviour may restrict the generalizations made from a study (Agnew & Pyke, 1987). With respect to the tests selected for testing children's language competence, quantitative reasoning skills and memory functioning, the items should have been varied and broader in order to identify children's strengths and delays in these skill areas clearly. Results from broadly based developmental tests would corroborate the parental inventory results more adequately, thus justifying greater generalizations of children's observed developmental strengths and delays. The inventories contained extensive coverage of the various aspects of childhood development and the home environment, but the major concern was whether they represented ecologically valid features of the Dar-es-Salaam family environment. This concern will be addressed directly in the Results section.

The Hawthorne effect, known to confound the ecological validity of observed behaviours in studies which extend over a period of time, was controlled for by associating the research with future improvement of children's education which parents currently accord high priority. Direct parent involvement in the interviews gave them little time to reflect on the presence of an observer. Thus their responses and reaction patterns were expected to be natural and presumably valid.

Representation of ecological validity demands an explicit description of the behaviour characteristics with reference to the context of the environment (Baine, 1986). Ecological validation of the instruments was a principal objective of the study. The interview component was designed to enhance data collection on the various items on the inventories. Parental illustrations of specific behaviours or activities performed by children and the presence of certain objects in the family environment, presented a picture of children's home environment and thus the validity of observed interactions.

In summary, cross-sectional designs facilitate greater degree of generalization of results when compared to experimental designs, but fail to support strong cause-effect explanations. The primary purpose of this study was to explore some developmental strengths and delays among young school-age children and relate them to the type of home environment in which children were reared. The relationship would suggest aspects of the home environment which enhance early childhood development and learning in Tanzania. Ultimately, children suspected of developmental delays or handicapping conditions would be helped through consultation with parents and preschool child care givers to facilitate development of appropriate early intervention programs.

Procedures

Language

All parents and children in the study were fluent and competent in Kiswahili language. Both at home and at preschool centres, communication and instruction was conducted in Kiswahili. Most of the children involved in the study were born in an urban environment, Dar-es-Salaam; as a result, some spoke more fluent Kiswahili than their parents, especially mothers.

Training of Teachers

Familiarization with teachers. Training of the five teachers involved in interviewing the parents in the study was conducted in three stages. Stage one involved a process of acquaintance and familiarization with the author and the research itself. Several visits were paid to each preschool centre to explore the general environment, the teachers' background education, the types of family backgrounds from which children came, the way in which the centres were managed, and the general activities in which children were involved.

Teachers were orally introduced to the proposed research, its importance to them and the children, their expected role in participation, and subsequent understanding of developmental and learning characteristics of preschool children in Tanzania. It was also emphasized that teachers' participation would contribute to understanding parental provisions for their children, thus suggesting direction for developing appropriate activities for preschool children. The knowledge would also help teachers and parents to assist their children to grow optimally and to learn more effectively at school. All five teachers appreciated the selection of their centres and were eager to participate in the study.

Observer Training and Reliability. Stage two introduced the research instruments to the teachers. The MPI and the HOME Kiswahili versions were presented to the teachers. Detailed questionnaires, such as the MPI, were unfamiliar to the teachers, thus the introduction of each instrument was carefully made after the teachers had released the children to go home. All the teachers at each centre were introduced to the study instruments and the participating teachers were then individually trained for the research at their respective centres because there was no means of assembling them together.

The teachers first read through the statements/ questions after the principal researcher had introduced the different sections. The teachers were asked to identify unclear statements for discussion. After this preliminary introduction, the teacher was asked to study the instruments for several days, thinking specifically about four guiding questions.

1. Does the statement/question refer to something likely to be found in the Tanzanian family (Dar-es-Salaam)?
2. Do children in the centre manifest each of the behaviours indicated?
3. What substitutions could be made for statements thought to be inappropriate for the Tanzanian family and environmental context?

4. Was the language of the statements/questions clear to the teachers?

The principal researcher and the teachers came together for a second meeting where the instruments were discussed in detail following the above criteria. This discussion was intended to clarify whatever problems the teachers encountered in understanding the instruments and the accompanying instructions. Understanding of the language and the content in the instruments was essential for accurate judgement of the behaviours exhibited by children and the type of opportunities provided by the family environment for stimulating child development.

Practice sessions. Stage three involved practice sessions. The first practice session involved the teachers in acting as respondents to one another. The second session involved the teachers administering the instruments to two selected parents from each centre. Three assumptions guided these training sessions. The first assumption held that teachers and parents were unfamiliar with this detailed technique of studying children and their family environments. Sufficient training through discussions and practice were therefore necessary. The second assumption held that level of education could limit the extent and confidence with which parents expressed themselves, especially the clarity and appropriateness of children's observed behaviours. Researchers would therefore need to spend more time with parents to provide extended explanations of behaviour categories represented on the MPI and the HOME. The third assumption held that the research instruments were being tried for the first time in a different culture, so parents were required to provide illustrative examples appropriate to the behaviour under consideration. For example, illustrations of children performing self-help activities in the family would comprise washing to utensils after meals and occasionally making their beds.

The teachers were thus asked to keep a notebook for recording illustrative examples of children's behaviour reported by parents during the discussions and the interviews. The information obtained from parents was used to validate or invalidate the items on the MPI and the HOME inventories. The information was also used to determine whether the activities and characteristics represented in the inventories were ecologically appropriate to the age groups under study.

As a procedural practice, teachers had been cautioned throughout the training sessions to respect all traditional courtesies whenever they visited families. Family and personal sensitivities had to be respected and handled discretely. An example of these sensitivities could be the mothers' zealousness to portray a colourful picture of their child's activities or difficulties experienced in raising children. Sensitive issues could also involve mothers' difficulty in describing and exemplifying children's specific behaviours. Mothers' level of education was one factor that could influence the confidence with which they explained and exemplified their child's behaviour. In such situations, it was necessary that teachers tactfully pursue unclear or incomplete explanations.

Qualitative Information

In the process of examining the items of behaviour contained in the MPI and the characteristics of the family environments represented on the HOME inventory, it was realized that some aspects of children's activities and characteristics of home environments might not be covered. Interview questions to reveal hidden aspects of children's lives and environments were thus designed alongside the two inventories.

The areas covered included a description of each child's typical day (morning, afternoon, evening and bed-time). Types of responsibilities, roles and behaviour expected of children of both sexes, types of acceptable and unacceptable behaviour, materials available for children's play and learning in the family, parent-child interaction, and types of daily home routines, provisions for academic stimulation and developmental and behaviour problems guided the interviews. The information collected in these areas was intended to be complementary to the data obtained through the inventories.

Administration of the Inventories

The HOME

The researchers made the home visits at agreed times when both the parent and the child were at home. The time for the visits had been prearranged in agreement with the parents to minimize unexpected interruptions during the interviews.

The first visits were spent in explaining the purpose of the study, the kind of information required, and the time expected to be spent on the interviews. The importance of children's presence during the researcher's visit and the overall importance of the study in understanding children's development and potential problems were emphasized. Parents and their children were happy to participate in what parents considered to be an important study for their children's education. Scoring of items from the two inventories was based on mothers' reported actual behaviours of children within the various family contexts.

Teachers had been advised to accept parental explanations during the interviews, rather than show doubt and objection which would put parents on the defensive.

The teachers were also asked to administer the HOME first, due to the relatively general nature of its items. Through exploring the general aspects of the home environment first, the teachers and parents would become comfortable with one another so that, when the MPI was administered, the parents would readily provide detailed information about children's behaviours. The teachers were also advised to pay attention to all children if more than one child was present during the visit, even though the target was to be the selected child. Praise and positive complements were given whenever necessary to ensure continuation of a cordial atmosphere with mothers and children.

In addition to HOME and MPI questions, the interviewers were instructed to ask parents whether they told stories to their children, whether they had time to sit together and talk to the children. The interview covered the following: (a) places which children visited with parents; (b) play objects available for children's use at home or in surrounding environments; (c) the type of activities and responsibilities assigned to children by their families; and (d) discipline techniques used by families.

In conducting the interviews, the interviewers were alerted to record the information presented simultaneously by parents to avoid unnecessary repetition of questions.

The interviewers were advised to check to ascertain that all questions on the scales had been answered to ensure that the inventories were complete before leaving the family.

Administration of Tests

Before administering the test materials to the children, the materials were checked by the teachers for appropriateness for Tanzania. Any animal, object or event depicted, used or spoken about, were judged to be those encountered by children in their everyday experiences in Dar-es-Salaam. The colours and shapes were associated with common objects within children's experiences. Round shapes were associated with marbles, balls, tomatoes or oranges. A cone shape was associated with a wooden play object known as "pia" in Kiswahili. Saucers were compared to small plates known as "kisahani," while ellipsoids were compared to "mtungi," special water pots for storing drinking water in homes, or "dodoki," used for scrubbing the body while bathing.

Children were also trained to familiarize them with test materials and procedures, for example, recognition of the colours and the shapes. Identification of the shapes was ensured through the naming of the objects and their colours. Five year old children had some difficulty with shape identification, so individual training for both five and six year olds was continued during the test administration.

After the training sessions, children were individually tested by the author in the head teachers' offices. Once engaged in the tasks, all appeared to enjoy the games immensely. The author had, prior to the research, participated in the children's classroom activities, which included arranging objects, playing with bottle caps, wooden blocks, picture rearrangement, singing, and physical play involving all children. As a result, the researcher became a very familiar person to the children. During the testing, children were free to react as they felt. The investigator was very supportive and sensitive to children's needs and reactions during the testing.

Vocabulary Test

According to Binet, young children aged two to six years and eleven months are tested with picture vocabulary items, while oral vocabulary is used for testing older children. Responses are generally scored along three criteria: (a) the most common meaning is credited; (b) the next common meaning is probed further; and (c) the third meaning is rejected.

The investigator puts a check-mark in front of every correct response for a pass of the item. The exercise was stopped after the child failed three or four of four items consecutively. Each child was presented with pictures of various objects and places and were asked to name them. Each child gave as many alternatives as he/she could in an attempt to get the acceptable meaning. Appendix C contains the Kiswahili names of the pictures administered to the children.

Quantitative Reasoning

Children's numerical knowledge was measured by manipulating counting blocks and pictures to demonstrate: (a) matching; (b) counting; (c) adding; (d) subtracting skills. In some problems, children were expected to demonstrate the ability to form logical series. The items required the child to answer quantitative items presented visually and orally. Both correct and incorrect responses were recorded. Since most of the children were not literate, the written response problems were not administered. Testing ceased when the child reached a stage where he/she failed three out of four items or all four consecutively.

Counting blocks and a tray were used for the exercises. The counting blocks were placed in a tray starting at the child's left and then the tray was placed in front of the child. The blocks were always removed before proceeding to the next item. The items and accompanying instructions are found in Appendix D.

Bead Memory

Procedure. Children were each introduced to the bead names and shapes in Kiswahili. The bead was matched with its picture in front of the child. The investigator told the child, "This is a picture of the kinds of beads in this box." The child was then shown one bead after another as presented on the pictures on the card: (a) blue round bead; (b) red saucer; (c) white ellipsoid; and (d) blue cone. Children demonstrated mastery of the names of the beads before the exercise began. The main difficulty for some children was associated with the shapes of cone and ellipsoid rather than colours. The majority of children were familiar with blue, red and white colours.

After the demonstrations, the testing commenced. The picture of the bead layout was put in front of the examinee and then he/she was instructed to perform activities (see Appendix E).

Data Analysis

Quantitative methods involving means, standard deviations and correlational comparisons were used to analyze the data from the inventories, (language) vocabulary, quantitative reasoning, and memory functioning. Information from the interviews was analyzed qualitatively according to the major themes of the interview.

Quantitative Data

Tables of means and standard deviations were prepared for the eleven scales of the MPI and for the eight scales of the HOME to gain insight into such aspects as data level and spread. The tables were useful in presenting the distribution of scores from the MPI and the HOME on the basis of centre, sex and age. The data were also represented graphically to provide a more vivid picture. At the same time, the means associated with the five centres, boys and girls, five and six year olds, were then tested for significance using both univariate and multivariate F-tests.

Since the MPI and HOME scales were expected to measure some related variables of the children's functioning, development and home environments, the Pearson correlations were calculated to establish the existence of significant relationships among the various scales and between the instruments. The first level correlations were calculated within the MPI subscales, the HOME subscales and the three measures of cognitive functioning, that is, vocabulary, quantitative reasoning and memory functioning. The second level correlations were calculated between the various subscales of the MPI, the HOME and the three tests.

This comparison helped to identify the subscales which were strongly correlated, meaning that they were assessing similar skills or aspects of the family environment. The comparisons also served to identify the scales and items which were inappropriate for the study. Consequently, these comparisons served to validate the different scales of the instruments in the context of comparison with the interview data.

Finally, the means which seemed to differ significantly were tested for interaction effects, specifically means for sex, age and centre were scrutinized carefully. The means for sex and age and those for centre and age were also examined for interaction effects. The strength of the exploratory tabular presentation, therefore, lay in the visible display of data analysis and in making important elements and patterns of data visible with subsequent validation of inferential tests.

Qualitative Data

Ten parents were interviewed on the various aspects of the home environment, activities and behaviour of their children. Themes were used to organize the interview data. The information was principally employed to provide context for the MPI and the HOME inventory YES/NO responses. The themes included: (a) types of responsibilities assigned to young children; (b) acceptable and unacceptable behaviour; (c) materials available in the family for children's development and learning; (d) parent-child interaction and academic support; and (e) behaviour/tasks not represented in the inventories.

Chapter V presents the results of the MPI, the HOME, and the three subtests, Quantitative Reasoning, Vocabulary and Memory Functioning, as well as the parent interviews.

CHAPTER V

RESULTS

This chapter presents results of the investigation. The study was intended to assess the appropriateness of the MPI and the HOME inventories for assessing and screening for developmental functioning and delays among preschool children and describe the characteristics of their family environments. Both inventories were parent self-administered but, due to the low level of education of some parents and their general inexperience with such research instruments, interviews were used as a complementary technique. In addition to parent reports of children's development and functioning, three cognitive tests covering language (vocabulary), quantitative reasoning and memory functioning were directly administered to the children.

The study was conducted over a five-month period (July to November, 1988). Five trained and experienced female nursery school teachers administered the inventories to parents and conducted the interviews. The principal investigator tested children on the three cognitive skills (language, memory and quantitative reasoning). Three sets of scores were obtained from the children, while another three sets of scores were collected from the mothers, that is, information from the two inventories and the interview data. In the final analysis, both the children's scores and the mothers' information were examined to present a developmental picture of children from each centre and their family environment characteristics.

The analysis process involved a presentation of summary statistics (frequencies, means and standard deviations). Paired means of each centre, age and sex were presented in tabular and graphical form for the MPI inventory and the three cognitive tests to enable a visual scan of the important differences among the five centres, between boys and girls and between the two age groups.

Another set of descriptive statistics, the correlational method, was used to establish relationships between individual sets of child development characteristics among the MPI subscales and among the subscales of the HOME. Both the MPI and the HOME subscales were again correlated with the three cognitive tests, vocabulary, quantitative reasoning and memory. A separate correlation matrix involving the 22 variables was prepared to provide a complete picture of significant and non-significant relationships.

Relationships between variables which appeared to be significantly correlated were examined and highlighted according to the parents' interview information.

A series of MANOVA analyses of variance employing the Wilk's Lambda F-test, were performed on the means to determine statistically significant differing pairs. The means involved children's performance on the developmental subscales, the home environment subscales and the cognitive subtests. Statistically significant differences were checked on the basis of main effects (centre, sex and age) and interaction effects (centre x sex, centre x age, sex x age and centre x sex x age).

Format for the Presentation of Results

Question 1

What developmental characteristics and functioning are exhibited by five and six year old children in Tanzania? Do children's performance from the five nursery school environments differ?

In answering this question, the means and standard deviations of the five nursery school centres were summarized in tabular form according to centre, age and sex. A comparison of the centre means was conducted to determine if there were any patterns reflected by the means in terms of high, medium and low. In addition to tabular presentation, the MPI developmental subscale results were presented graphically to provide a visual scan of the presence of differences between the centres, age and sex.

Observation of centre differences or similarities in this study would be important to the development of the country-wide proposed preschool and day-care programs because the policy assumes equality of service and opportunity for children from different families and social environments. Further detailed analysis of the genesis of any observed differences would enhance the planning of suitable and appropriate programs for centres in particular locations, urban or rural environments in the country.

Children's performance on the eleven MPI developmental and problem subscales are presented in Tables 5.1 to 5.11. Tables 5.1 to 5.7 summarize means and standard deviations for each of the five nursery school centres by age and sex, while Tables 5.8 to 5.11 present the same statistics for the problem subscales.

Table 5.1 (see also Figure 5.1) presents the results for the Self Help subscale. The individual means of each of the five centres for the five year olds range from 9.10 (sd. 2.42) to 13.40 (sd. 3.98), the highest mean being that of Centre B and the lowest mean being that of Centre D. For the six year olds, the means ranged from 15.3 (sd. 3.27) to 19.6 (sd. 2.66), with Centres B and C having the highest means. Centres A, D and E had, more or less, equal means between 15.40 (sd. 3.27) and 16.0 (sd. 2.94). Compared to the grand mean* of the five centres

---

*Grand mean of the five centres on a subscale.

Table 5.1

Self Help: Mean Scores by Centre, Age and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	9.60 (2.61)	10.60 (6.07)	10.10 (4.43)	14.40 (3.21)	16.40 (3.36)	15.40 (3.27)	12.75 (4.67)
B	14.80 (1.79)	12.0 (3.10)	13.40 (3.98)	20.40 (1.14)	18.80 (2.59)	19.60 (2.66)	16.50 (3.98)
C	10.00 (4.3)	14.40 (4.83)	12.20 (4.89)	19.0 (4.0)	18.0 (3.94)	18.50 (3.78)	15.35 (5.34)
D	8.40 (2.30)	9.80 (2.59)	9.10 (2.42)	16.40 (2.07)	15.60 (3.78)	16.0 (2.91)	12.55 (4.39)
E	8.80 (2.77)	9.80 (3.49)	9.30 (3.02)	15.80 (2.59)	16.20 (3.56)	16.0 (2.94)	12.65 (4.50)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*13.96 (4.80) Total Sample Mean & Standard Deviation.

n = 100

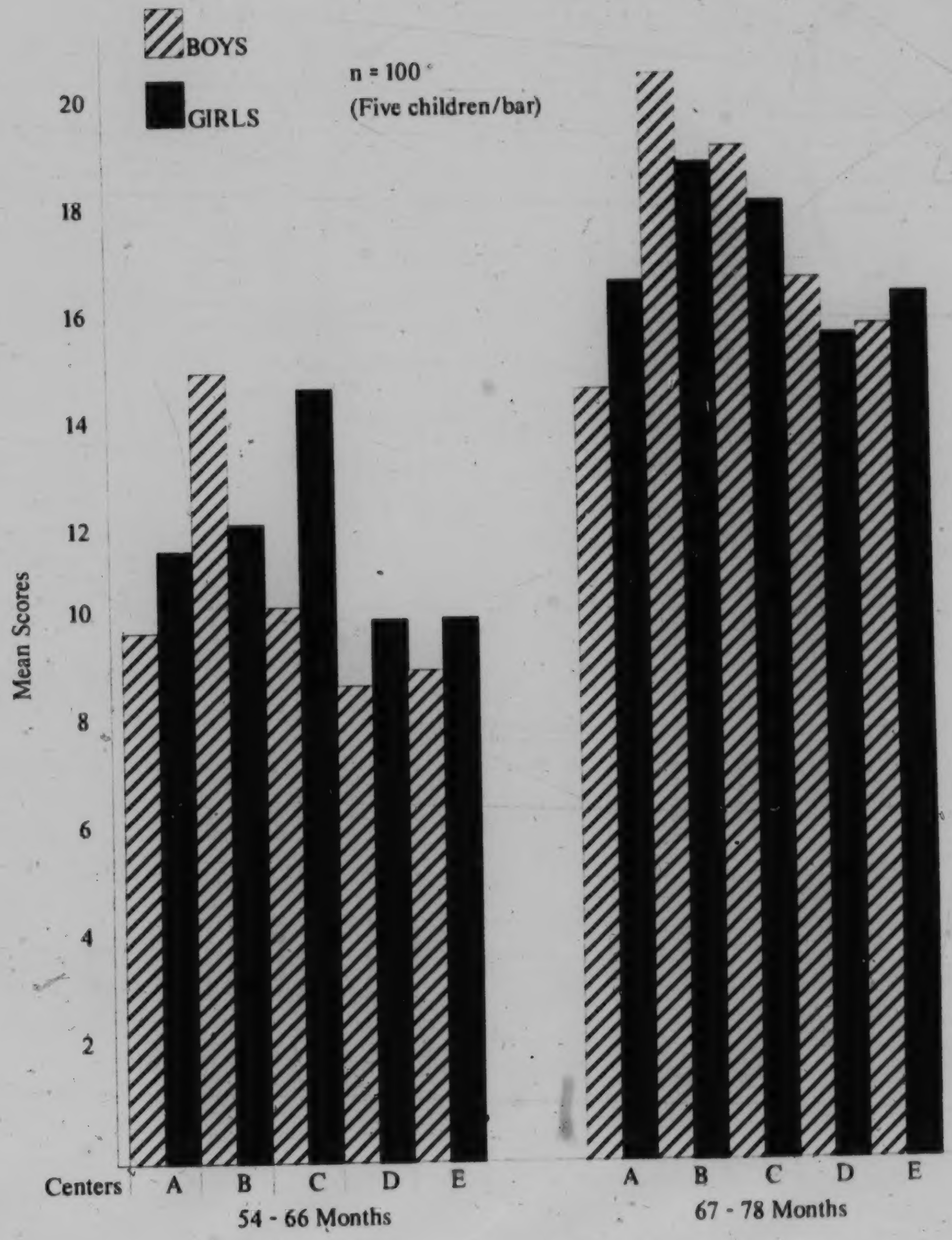

Figure 5.1. Self Help: Mean Scores by Centre, Age, and Sex

all the six year old means were greater.

These results suggest that six year old children were more capable of attending to themselves than five year olds. The higher means for the six year olds compared to the five year olds indicated that six year old children were viewed by parents as being more responsible in meeting various needs for themselves than five year olds. An examination of specific tasks performed by five and six year olds according to the MPI inventory showed that five year olds were restricted in such activities as crossing roads alone, using sharp instruments for cutting things, dressing and undressing themselves, and in taking baths on their own. The five year olds were also considered too young to lead others during play-time or serving themselves at tables. Most of the above tasks were freely performed by six year olds, except using sharp instruments for cutting things.

Table 5.2 (see also Figure 5.2) presents children's performance on Fine Motor tasks. The means for the five year olds for the five centres seem to be rather extreme, with Centres D and E having the lowest means (1.70, sd. 1.64) and Centre B having the highest mean (8.90, sd. 3.11). The overall means for five year olds in Centres D and E were extremely low (1.70, sd. 1.64 and 2.80, sd. 2.10) while those for Centres A, B and C were relatively high ranging from 5.4 (sd. 2.32) to 8.90 (sd. 3.11). The

Table 5.2

Fine Motor: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	4.60 (1.40)	6.20 (3.03)	5.40 (2.32)	9.40 (4.45)	12.20 (2.77)	10.80 (3.79)	8.11 (5.23)
B	8.20 (1.48)	9.60 (4.28)	8.90 (3.11)	15.60 (1.34)	16.40 (1.34)	16.0 (1.33)	12.45 (4.32)
C	4.0 (3.46)	7.0 (4.95)	5.50 (4.33)	13.20 (4.27)	12.0 (5.20)	12.60 (4.53)	9.05 (5.64)
D	1.60 (1.67)	1.80 (1.79)	1.70 (1.64)	11.0 (3.32)	8.80 (4.21)	9.90 (3.76)	5.80 (5.06)
E	1.60 (1.52)	4.0 (2.0)	2.80 (2.10)	6.0 (2.45)	9.0 (4.06)	7.50 (3.54)	5.15 (3.72)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*8.11 (5.23) Total Sample Mean & Standard Deviation.

n = 100

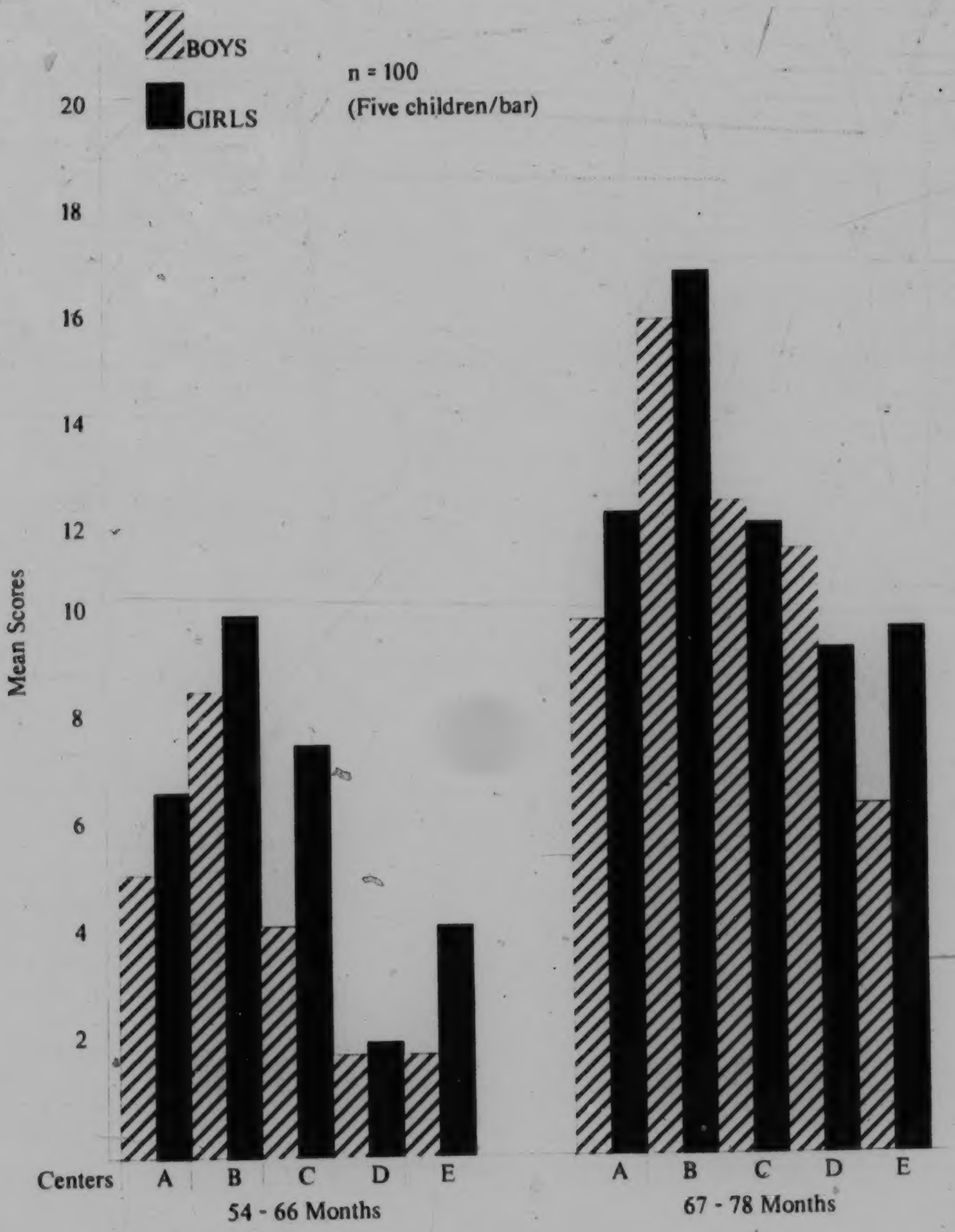

Figure 5.2 Fine Motor: Mean Scores by Centre, Age, and Sex

means for six year olds ranged from 7.5 (sd. 3.54) to 16.0 (sd. 1.33). Overall, the means for Centre B five year olds was higher than the grand mean (8.11, sd. 5.23) of the five centres. The mean differences between the five and six year olds were statistically significant at p < .05, except that for boys in Centre E.

From an analysis of individual items in the Fine Motor subscale, the five year olds seem to have difficulty in activities related to tying things such as shoe laces, buttoning shirts and shorts, writing numbers and words, drawing according to given instructions, representing more than one object in a drawing, such as a house, a cow, a cat or trees, and in cutting things using sharp instruments. The main problem affecting children's performance of these Fine Motor skills was the limitation of opportunities for practice and availability of materials in the family.

Families tended to provide practice for the 3 Rs through the nursery school for children aged six and preparing for primary school level. Little practice was available on the 3 Rs for the five year olds in the majority of families, except in a few highly aspiring for their children's early educational achievement. Most of the Fine Motor items seemed to represent a typical literacy oriented family where children were exposed to plenty of preschool drawing, writing and reading materials, many of which were not abundant in Tanzanian families.

Table 5.3 (see also Figure 5.3) summarizes the results for the Expressive Language subscale. The means for five year olds ranged from 9.50 (sd. 2.76) to 12.60 (sd. 2.95). Performance for Centres A, B and C was more or less equal, ranging between 12.6 (sd. 2.95) and 13.0 (sd. 1.87). Performance of the six year olds ranged from a mean of 12.0 (sd. 1.76) to a mean of 15.40 (sd. 2.12). Performance of the five year olds in Expressive Language for Centres A, B and C was slightly above the grand mean (12.55, sd. 3.51) for the five centres. Means for the six year olds were equal to or above the grand mean and ranged from 12.0 (sd. 1.76) to 15.40 (sd. 3.05), thus being significantly different from the means for the five year olds at $p < .05$.

In relation to these mean differences between the five year olds and six year olds, the parents indicated that the six year olds had greater facility for language than did the five year olds. In general, both the five and six year olds applied language efficiently in asking questions, singing short songs and poems, expressing needs, telling stories, reporting common, everyday events, naming things and people, to name only a few examples. Parents reported that children applied morphological, phonological, grammatical and semantic rules of Kiswahili to describe different situations and contexts in everyday life experiences appropriately.

Table 5.3

Expressive Language: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	13.0 (1.87)	9.60 (4.72)	11.30 (3.83)	11.40 (1.67)	12.60 (1.82)	12.0 (1.76)	11.65 (2.92)
B	12.80 (3.27)	9.40 (4.39)	11.10 (4.07)	14.40 (2.19)	16.0 (2.55)	15.20 (2.39)	13.15 (3.87)
C	12.60 (3.58)	12.60 (2.61)	12.60 (2.95)	14.80 (3.83)	15.80 (2.49)	15.30 (3.09)	13.95 (3.25)
D	9.80 (2.77)	10.0 (3.08)	9.90 (2.77)	14.40 (1.80)	16.40 (2.07)	15.40 (2.12)	12.65 (3.70)
E	8.20 (2.78)	10.80 (2.28)	9.50 (2.76)	11.60 (2.51)	14.80 (2.86)	13.20 (3.05)	11.35 (3.41)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*12.55 (3.51) Total Sample Mean & Standard Deviation.

n = 100

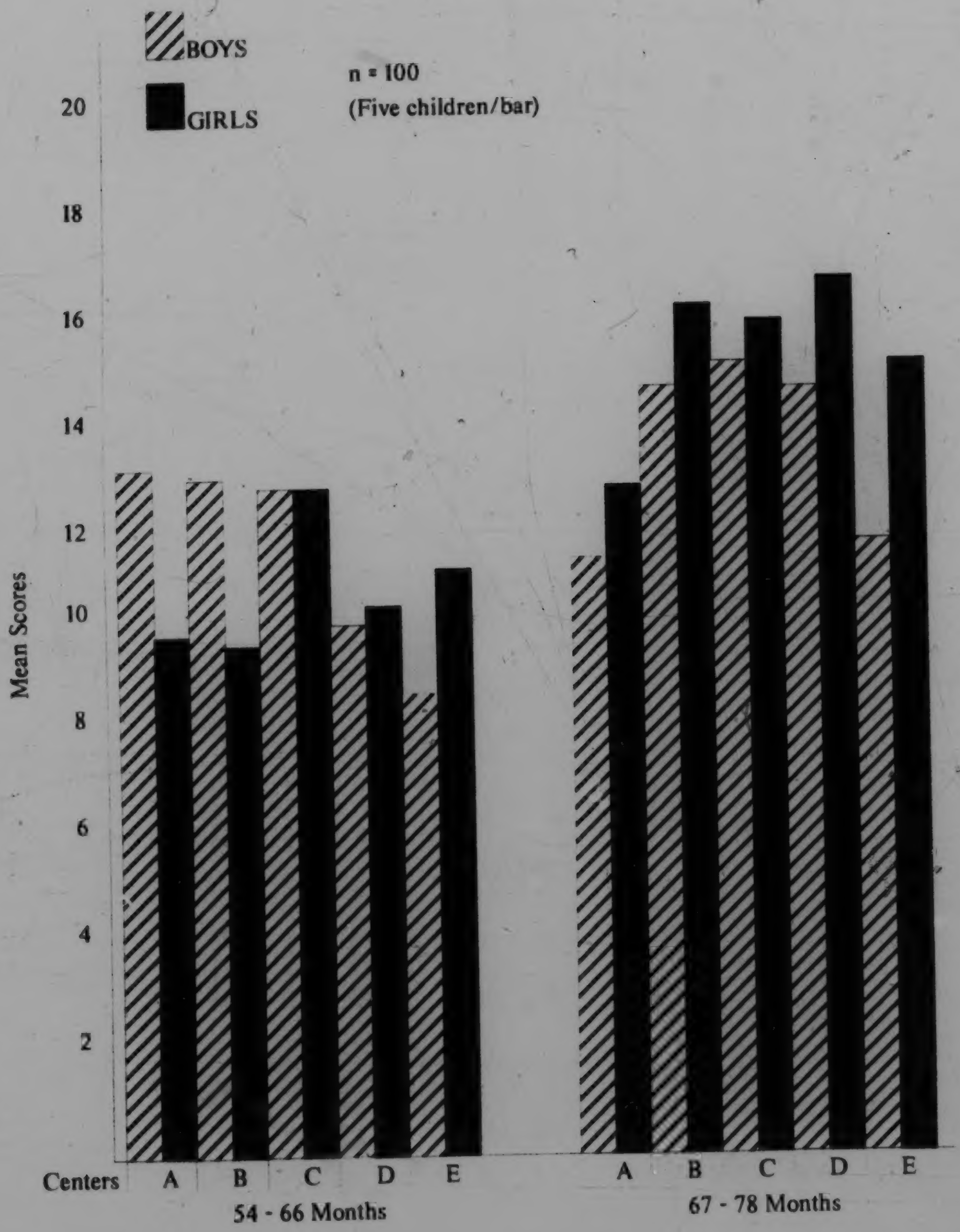

Figure 5.3 Expressive Language: Mean Scores by Centre, Age, and Sex

The five year olds were, however, reported to have some language problems not common to the six year olds. Some of these problems included correct and appropriate use of certain irregular plurals, lack of certain questioning styles, problems in using common conjunctions to join sentences and expressing intentions. The items relating to these language skills were performed poorly by five year olds. The results, therefore, reflect better mastery of six year olds in the use of language rules and their applications to represent different social contexts and experiences.

Results for Conceptual Comprehension are summarized in Table 5.4 (see also Figure 5.4). The five year old children had means ranging from 14.50 (sd. 4.6) to 20.30 (sd. 4.37), while the mean for six year olds ranged between 21.0 (sd. 3.33) to 27.10 (sd. 3.6). Compared to the grand mean (20.99, sd. 5.6), the five year olds from Centres B and C performed close to the grand mean. The overall differences between the means of the six year old children's performance were statistically significant ($p < .05$) compared to means of the five year olds.

Children's Conceptual Comprehension was determined through their knowledge of the surrounding environment, its characteristics, and through different aspects of their social relations with adults. Both age groups were familiar with counting objects within the environment,

Table 5.4

Comprehension: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	19.40 (2.30)	14.40 (6.47)	16.90 (5.28)	22.60 (4.22)	22.20 (3.20)	22.40 (3.53)	19.65 (5.20)
B	22.40 (1.14)	21.80 (4.09)	22.10 (2.85)	26.20 (2.77)	28.0 (4.42)	27.10 (3.60)	24.60 (4.07)
C	19.0 (4.90)	21.60 (3.84)	20.30 (4.37)	25.80 (6.30)	25.80 (5.07)	25.80 (5.39)	23.05 (5.55)
D	15.0 (5.05)	14.0 (4.64)	14.50 (4.60)	22.40 (2.51)	25.0 (4.85)	23.70 (3.89)	19.0 (6.28)
E	13.80 (3.03)	18.40 (3.85)	16.10 (4.07)	19.80 (2.39)	22.20 (3.96)	21.0 (3.33)	18.55 (4.41)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*20.99 (5.60) Total Sample Mean & Standard Deviation.

n = 100

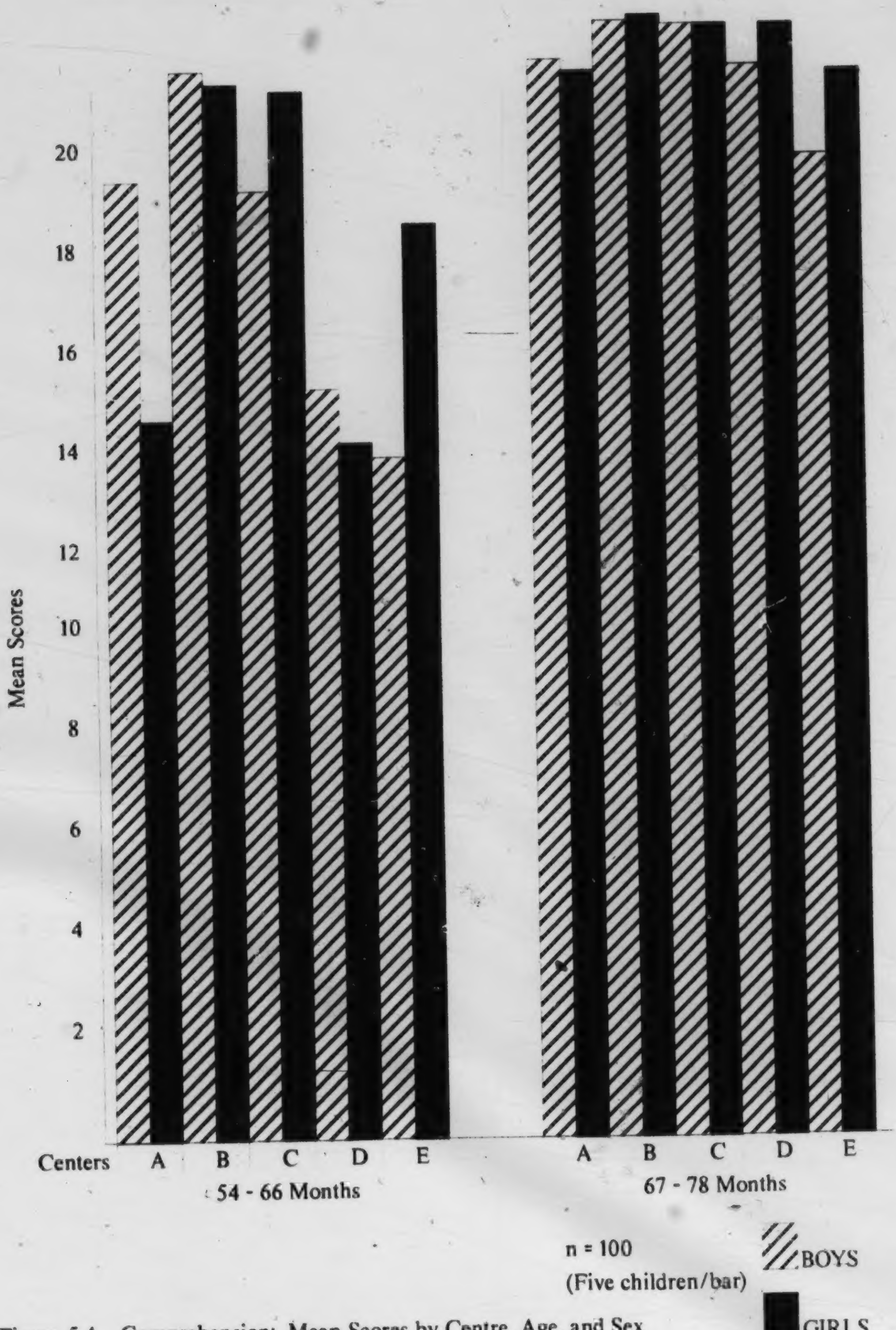

Figure 5.4 Comprehension: Mean Scores by Centre, Age, and Sex

naming things and events, and explaining classes of things, such as animals, utensils and birds. Children were also fond of asking meanings of words and experiences, and they could recognize different voices within the environment. Children also understood parts of the body, knew places, and knew functions of common tools and instruments found in their homes and surroundings.

Despite children's knowledge of different objects and situations in everyday life experiences, five year olds' performance indicated weaknesses in comprehending character of objects, animals and events, differentiating time of the day and days of the week, knowledge of the alphabet, knowledge of traumatic events such as death, knowledge of cardinal and ordinal numbers in counting, and differentiation of object sizes and shapes. The six year olds were also reported to experience difficulties with some of these tasks. However, their overall performance on all the items was much higher for both boys and girls than that of the five year olds.

Children's performance in everyday memory tasks (see Table 5.5; Figure 5.5) indicated that, among the five year olds, only those in Centre C were functioning above the grand mean (10.14, sd. 3.09). The six year olds in Centre E (mean 9.40, sd. 2.83) performed below the grand mean, while children in the other centres had means ranging from 11.5 (sd. 2.32) to 13.30 (sd. 2.0) which was above the

Table 5.5

Memory: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	8.60 (1.52)	8.20 (4.55)	8.40 (3.20)	10.80 (2.39)	12.40 (2.19)	11.60 (2.32)	10.0 (3.18)
B	9.40 (3.21)	9.60 (3.84)	9.50 (3.34)	12.80 (2.28)	13.80 (1.79)	13.30 (2.0)	11.40 (3.32)
C	9.60 (3.13)	10.40 (2.30)	10.0 (2.62)	13.0 (3.39)	11.40 (2.51)	12.20 (2.94)	11.10 (2.94)
D	7.80 (0.84)	7.20 (1.79)	7.50 (1.35)	12.0 (1.87)	11.0 (2.83)	11.50 (2.32)	9.50 (2.76)
E	6.60 (2.30)	9.40 (1.94)	8.0 (2.49)	7.40 (1.14)	11.40 (2.61)	9.40 (2.83)	8.70 (2.70)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*10.14 (3.09) Total Sample Mean & Standard Deviation.

n = 100

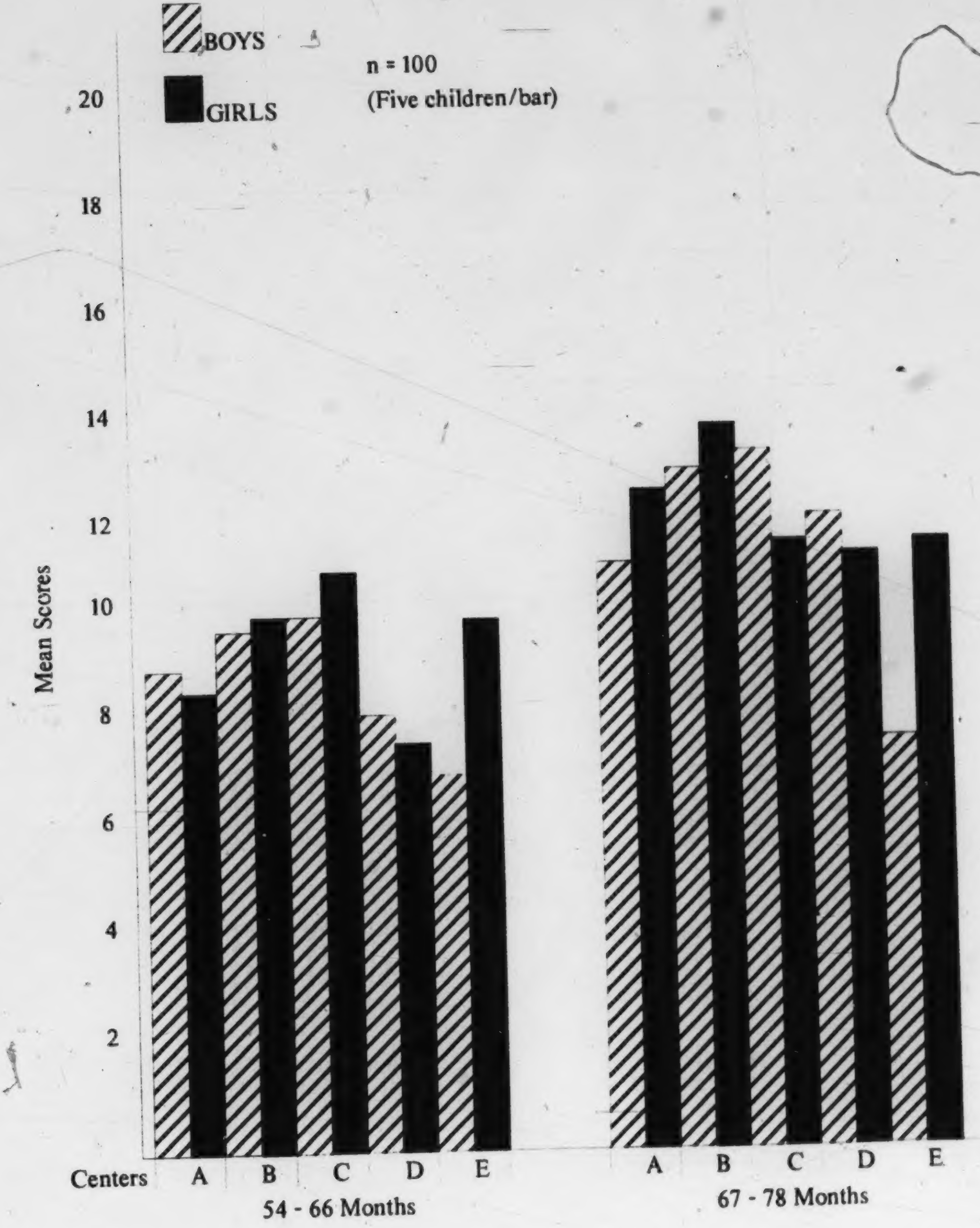

Figure 5.5 Memory: Mean Scores by Centre, Age, and Sex

grand mean. The means for Memory subscale across the five centres seemed to be closer together, especially those of six and five year old girls. Overall, Centres D and E means were lower than those for Centres A, B and C, but the differences were not statistically significant except for age.

Parents' reports on individual Memory items suggested that the five and six year old children's memory activities in the home did not vary much. However, the six year olds were observed to formulate riddles and solve them more frequently than five year old children. They told more stories and reported more past events than the five year olds. They more often reminded parents about forgotten promises than did the five year olds. When asked about family members and activities, both five and six year olds could provide reasonable and informative explanations. Nevertheless, the differences between the memory activities of five year olds and six year olds seemed to be in the amount of information and the strategies used to remember things.

With reference to Letter Recognition skills (see Table 5.6; Figure 5.6), performance was at the lowest level for both five and six year olds, with a low mean range of 0.50 (sd. 0.71) to 3.0 (sd. 2.11) for five year old children and a medium mean range of 2.30 (sd. 2.36) to 5.80 (sd. 0.92) for six year old children. The grand mean for

Table 5.6

Letter Recognition: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	0.40 (0.89)	1.0 (1.22)	0.70 (1.06)	3.00 (3.24)	5.80 (1.64)	4.40 (2.84)	2.55 (2.82)
B	1.80 (1.30)	4.20 (2.17)	3.0 (2.11)	5.60 (1.14)	6.0 (0.71)	5.80 (0.92)	4.40 (2.14)
C	1.0 (1.73)	3.80 (1.92)	2.40 (2.27)	5.60 (3.13)	4.40 (1.95)	5.0 (2.54)	3.70 (2.70)
D	0.60 (0.89)	0.40 (0.55)	0.50 (0.71)	3.40 (0.55)	3.60 (2.07)	3.50 (1.43)	2.0 (1.89)
E	0.20 (0.45)	2.0 (1.58)	1.10 (1.45)	1.0 (1.0)	3.60 (2.70)	2.30 (2.36)	1.70 (2.0)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*2.87 (2.51) Total Sample Mean & Standard Deviation.

n = 100

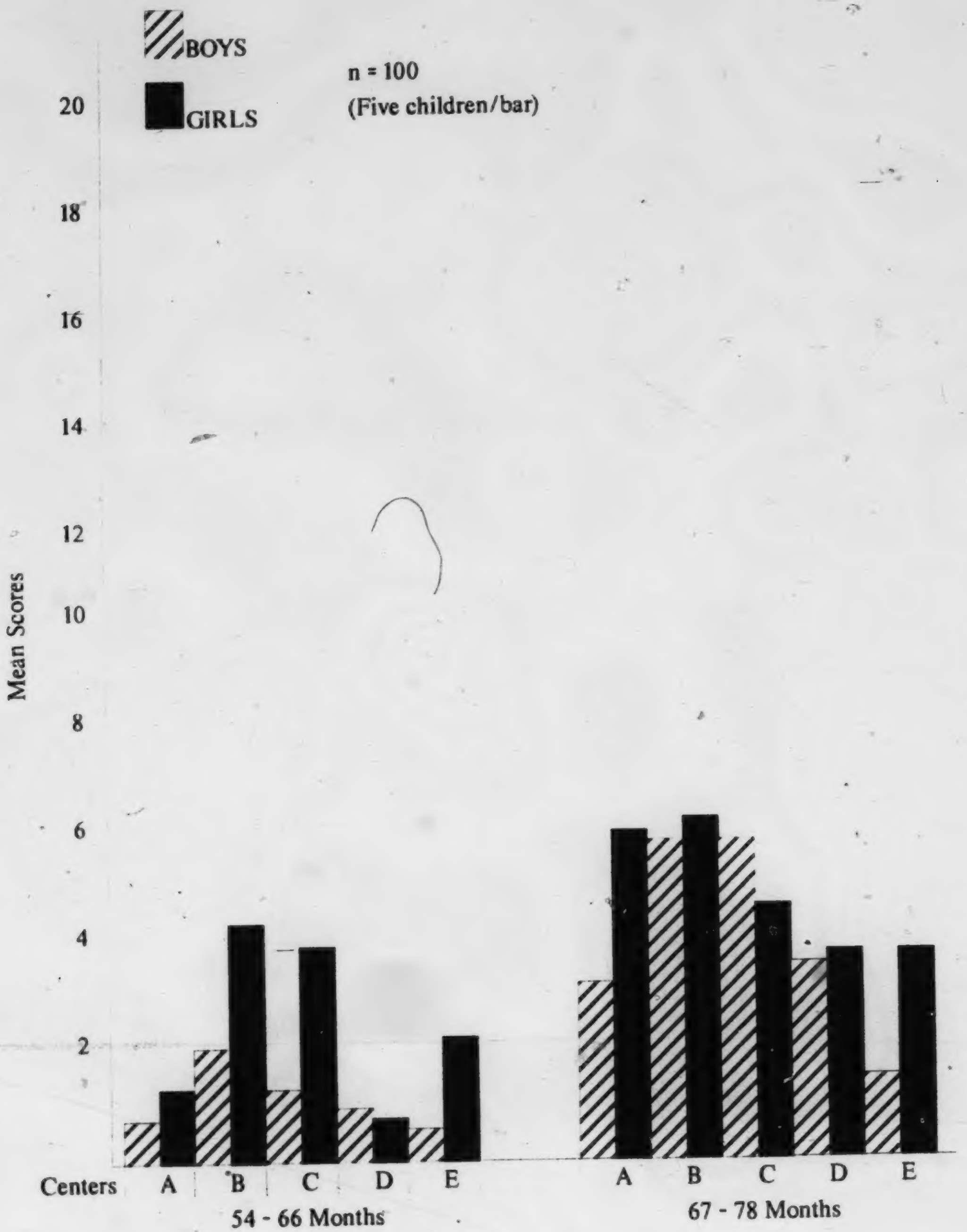

Figure 5.6 Letter Recognition: Mean Scores by Centre, Age, and Sex

the five centres was 2.87 (sd. 2.51), which compares favourably with means of the five year old children in Centre B and the six year olds' performance in all five centres, except those in Centre E (mean 2.3, sd. 2.36). The differences between six year old children's performance was statistically significant (p < .05) over that of the five year olds.

Discussions with parents revealed that Letter Recognition skills and reading activities were not emphasized in the families. A few highly educated families tried to encourage their children to draw, but lack of direction from a knowledgeable expert generated a lack of motivation in the children. Generally, in Tanzania, reading and writing activities are not systematically developed in the home until children enter nursery schools and, even then, usually not until they enter primary schools.

Lack of emphasis on preschool reading and writing skills did not mean, however, that parents do not value these skills. In fact, the contrary is true, since many parents in the study indicated that they had purchased children's books and that they regularly tried to help children learn at home. They also indicated that they monitored and checked children's day-to-day nursery school literacy activities. As a result of home/nursery school support, quite a number of six year olds could recite the alphabet, read words and write some common names from memory. Lack of appropriate preschool children's materials and activities in the society in general negatively affected parental efforts to provide educational and play materials for young children.

Results for children's Number Comprehension are summarized in Table 5.7 (see also Figure 5.7). Evidence from the preceding results from Conceptual Comprehension showed that children encounter different activities in everyday experiences to facilitate acquisition of counting skills. The means from Table 5.7 show a range of 4.70 (sd. 0.82) to 6.10 (sd. 1.10) for five year old children in the five centres, while the means for six year old children ranged from 5.70 (sd. 0.67) to 7.0 (sd. 0.82). The means for the five year olds in Centres D and E were slightly lower than those in Centres A, B and C. Statistically significant differences (p < .05) were observed between the means of Centres B and C and those of Centres D and E. The means for the six year olds happened to be equal to or greater than the overall grand mean, thus being significantly different from those of the five year olds.

Further exploration of the activities which helped children to learn number concepts revealed that both five and six year olds were often sent to purchase simple items in the nearby shops, streets or from vendors. They were often asked to count items, such as utensils to match the

Table 5.7

Number Comprehension: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	5.20 (1.09)	5.20 (2.17)	5.20 (1.62)	5.40 (0.55)	6.0 (0.71)	5.70 (0.67)	5.45 (1.23)
B	6.80 (0.45)	5.40 (1.14)	6.10 (1.10)	6.80 (0.84)	7.20 (0.84)	7.0 (0.82)	6.55 (1.05)
C	5.80 (1.79)	5.60 (1.34)	5.70 (1.50)	6.60 (1.67)	6.20 (1.48)	6.40 (1.50)	6.05 (1.50)
D	4.40 (1.14)	3.80 (1.30)	5.10 (1.62)	6.40 (0.55)	5.80 (1.92)	6.10 (1.37)	5.10 (1.62)
E	4.60 (0.89)	4.80 (0.84)	4.70 (0.82)	5.60 (0.89)	6.20 (0.84)	5.90 (0.88)	5.30 (1.03)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*5.69 (1.69) Total Sample Mean & Standard Deviation.

n = 100

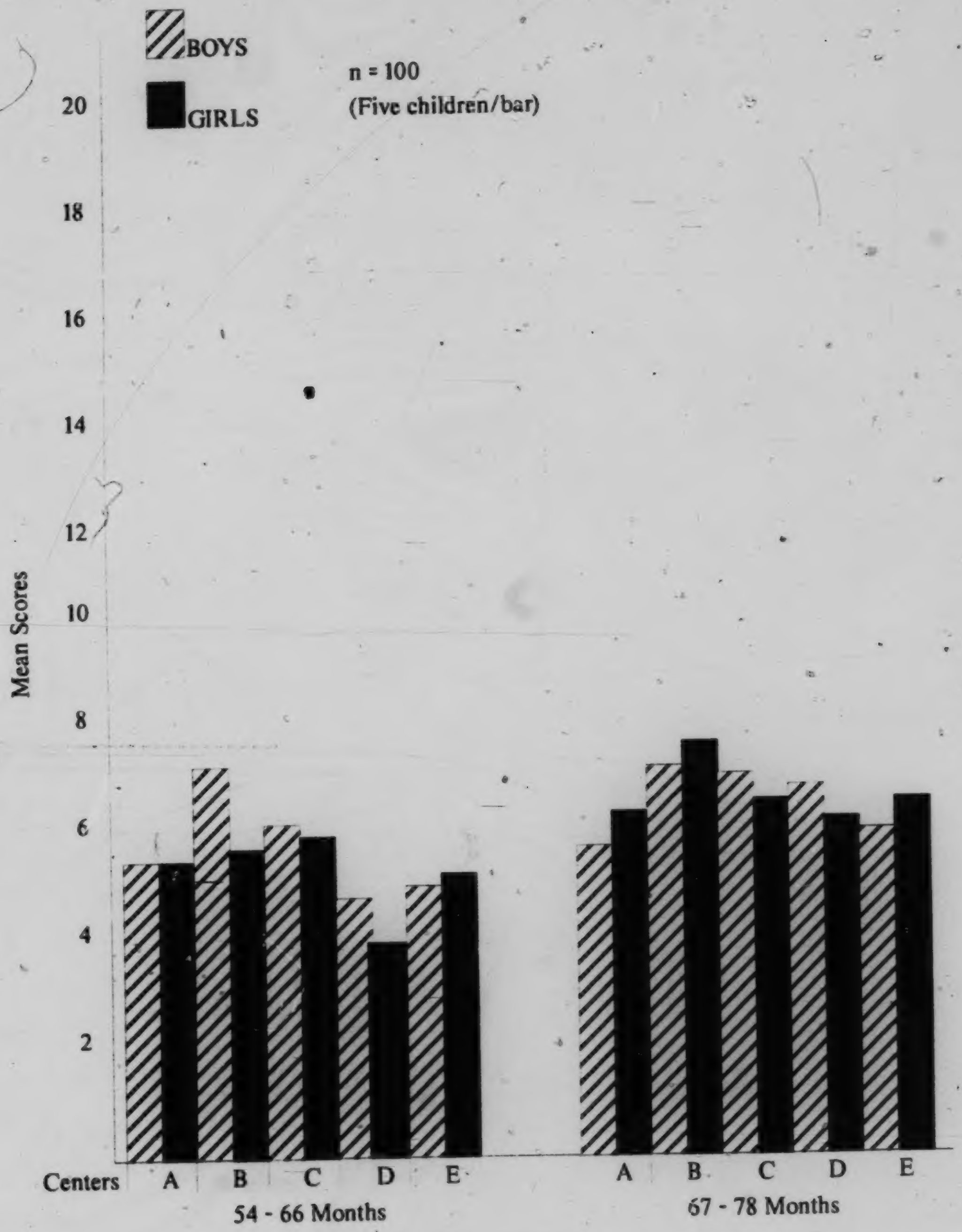

Figure 5.7 Number Comprehension: Mean Scores by Centre, Age, and Sex

number of people in the house or sharing fruit and other countable food items. Children were also encouraged to learn the number system through the use of their fingers as mnemonic devices when sent to fetch things for adults.

The parents indicated that children did not learn about time measurement and fractions prior to attending primary schools. To some extent, this lack of knowledge of fractions was surprising because food items and other divisible materials were always shared among people in the family when there was not enough to go around. Children were particularly encouraged to share by halving or quartering things such as bananas, green maize cobs and sugar cane. The practice was intended to promote a sense of togetherness and cooperation in children. As observed earlier, the home environment, although anxious to promote reading, writing and counting, did not practically provide children with stimulation to write numbers. The items related to children's ability to write numbers was, therefore, performed poorly by both five and six year old children.

In summary, the results from the seven developmental subscales indicate that five and six year old children's performance was always higher for the six year olds. The mean differences between the five and six year olds' performance were always statistically significant in all the seven developmental scales, especially in the Self

Help skills, Fine Motor activities, Expressive Language use, Conceptual Comprehension, Memory Functioning, Letter Recognition and Number Comprehension skills. Evidence from parents concerning children's actual performance of particular tasks on the subscales indicated that the five year old children had more difficulty in the Self Help, Fine Motor and Letter Recognition subscales. The explanation for this seemed to be the limited environmental stimulation and limited family provision of materials and opportunities for children to practice these skills. Younger children were particularly limited by their age, experience and deliberate parental restrictions in performing some tasks considered either too complicated for them or a hazard to their safety. Consequently, the six year old children receive more encouragement and provisions from their parents and preschool centres, especially in developing skills related to the 3 Rs.

As far as the five centres were concerned, contrary to original research expectations of no difference among children's activities, performance of children from the five centre locations differed probably due to differing family expectations and experiences. Nursery schools D and E results were particularly striking for being relatively low on all the seven developmental subscales. Children from these two particular centres came from city locations with high residential density where several families often shared one house. The majority of families were identified as medium income and of average educational level of twelve years for men and slightly lower for women in the samples. Children from Centres A, B and C came from comparatively affluent locations of the city where the majority of the sample families lived in single-family houses, parents were comparatively well educated, had better paying jobs and, subsequently, much higher incomes. Discussions with parents from Centres A, B and C stressed an ambition for their children to be academically competent and well disciplined. The parents from Centres D and E emphasized good discipline, respectfulness and cooperation with other children in the neighbourhood.

A comparison of the performance of the five and six year old boys and girls within the respective age groups did not indicate statistically significant differences. Performance of the five year old boys and girls on the developmental subscales was quite close in range, as was the performance for six year old boys and girls. The developmental and functional differences that mattered, therefore, seemed to be those related to age and centre characteristics.

Problem Symptom Subscales

The problem symptom subscale results are summarized in Tables 5.8 to 5.11. Table 5.8 (see also Figure 5.8) summarizes the results of children identified as immature. The results show that the means for this subscale for the five year olds ranged from 3.30 (sd. 2.21) to 6.80 (sd. 1.55), while those for the six year olds ranged from 2.90 (sd. 3.21) to 5:60 (sd. 2.31). On the average, the means indicate that five year olds had statiscally significant ($p < .05$) higher rate of immaturity than six year olds. The difference between the five and six year olds was expected since children learn to control and regulate their behaviour according to acceptable rules as they grow older.

The five year olds were identified as immature in terms of arranging their play materials, clothes and books in their appropriate places at home. They were more apt to be led by others, had difficulty finishing assigned tasks, needed more assistance in Self Help tasks, and they seemed to be more reluctant than the six year olds to do things. It was also interesting to observe that the six year olds were more often taken by others for group plays. Parents indicated that both the five and six year olds lacked systematic arrangement techniques of their materials in the home. However, differences among the five and six year olds in maturity were observed in older children being less forgetful, in their preference to play with older rather

Table 5.8

Immaturity: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	4.40 (2.19)	8.0 (4.64)	6.20 (3.91)	5.20 (1.64)	4.80 (2.59)	5.0 (2.055)	5.60 (3.10)
B	5.20 (2.49)	4.0 (3.74)	4.60 (3.06)	3.20 (2.86)	3.20 (1.92)	3.20 (2.30)	3.90 (2.73)
C	3.60 (2.88)	3.0 (1.58)	3.30 (2.21)	4.20 (4.32)	1.60 (0.55)	2.90 (3.21)	3.10 (2.69)
D	4.80 (2.68)	5.80 (3.03)	5.30 (2.75)	3.60 (3.05)	3.0 (1.22)	3.30 (2.21)	4.30 (2.64)
E	6.40 (1.14)	7.20 (1.92)	6.80 (1.55)	6.20 (2.59)	5.0 (2.12)	5.60 (2.31)	6.20 (2.02)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*4.62 (2.84) Total Sample Mean & Standard Deviation.

n = 100

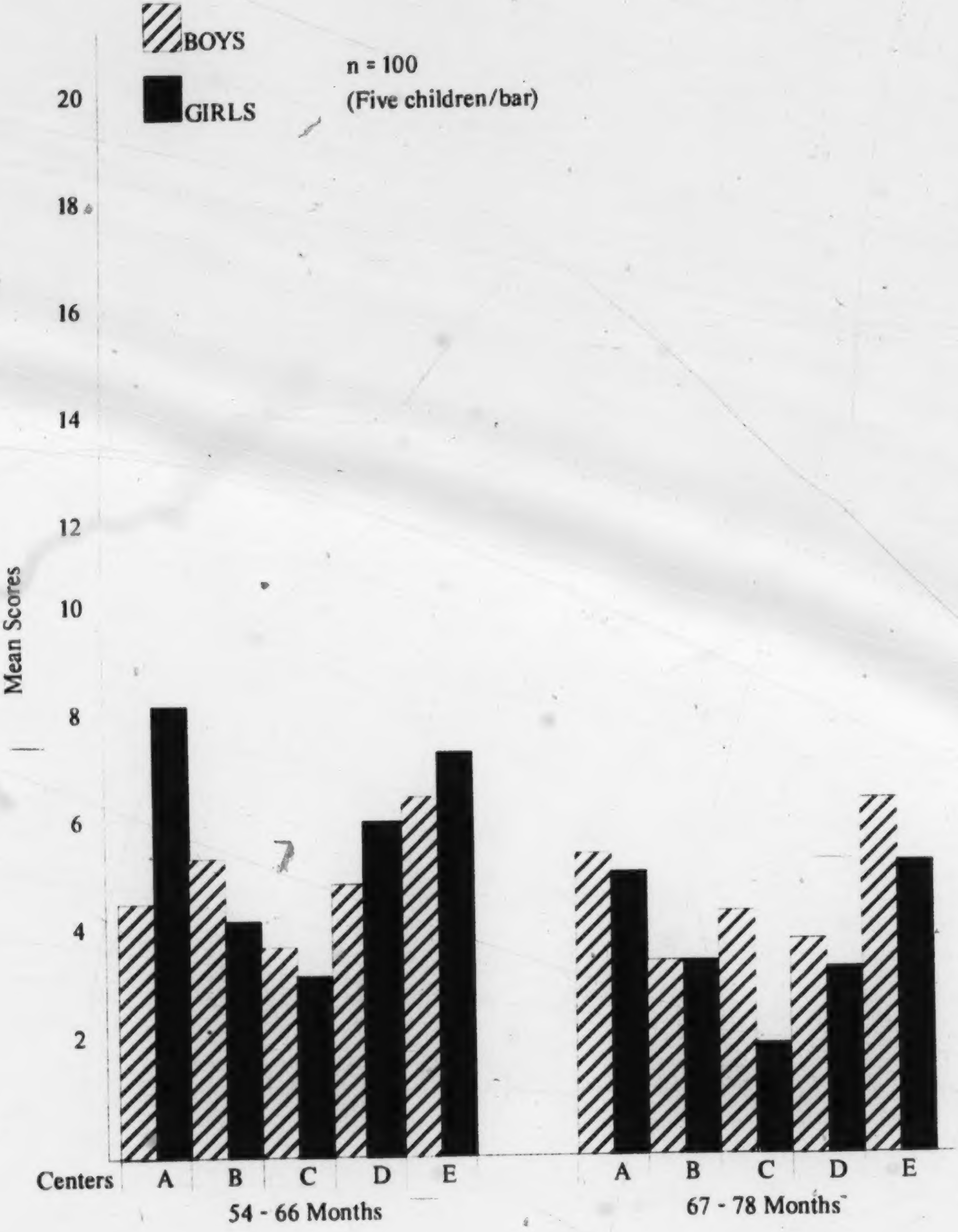

Figure 5.8 Immaturity: Mean Scores by Centre, Age, and Sex

than younger children, in their ability to grasp greater amounts of adult instructions more quickly, and in understanding concepts of time, such as today, yesterday and tomorrow.

Results for Hyperactivity are summarized in Table 5.9 (see also Figure 5.9). The results indicate that the means for five year olds ranged from 2.50 (sd. 1.27) to 4.10 (sd. 2.08) and those for six year olds ranged from 1.10 (sd. 0.74) to 2.90 (sd. 2.28). The grand mean was 2.62 (sd. 2.04), which means that the majority of five year olds were again significantly identified as more hyperactive than the six year olds, with most means at or below the grand mean. An unanticipated observance was that Centre B had the highest mean (4.80, sd. 2.39) for boys and Centre A had the highest mean (5.40, sd. 2.07) for girls. There seems to be an anomaly in identifying children regarded as hyperactive in this case. The consistent observation, however, is the relatively low identification of the six year olds, implying that as children grow older the behaviour characteristics labelled as hyperactive tend to disappear. Despite the statistically significant ($p < .05$) observed behaviour differences between the five and six year olds, caution must be exercised in interpreting these results.

Table 5.10 (see also Figure 5.10) summarizes the means and standard deviations for the Behaviour Problems

Table 5.9

Hyperactivity: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	2.80 (1.09)	5.40 (2.07)	4.10 (2.08)	3.80 (2.86)	2.0 (1.22)	2.90 (2.28)	3.50 (2.21)
B	4.80 (2.39)	1.40 (1.67)	3.10 (2.64)	1.40 (2.19)	1.40 (2.07)	1.40 (2.01)	2.25 (2.45)
C	2.80 (2.17)	3.40 (2.07)	3.10 (2.33)	1.20 (0.84)	1.0 (0.71)	1.10 (0.74)	2.10 (1.97)
D	3.80 (1.79)	3.40 (1.52)	3.60 (1.58)	2.80 (1.64)	2.60 (1.67)	2.70 (1.57)	3.15 (1.60)
E	2.20 (1.30)	2.80 (1.30)	2.50 (1.27)	2.60 (2.07)	0.80 (1.30)	1.70 (1.89)	2.10 (1.62)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*2.62 (2.04) Total Sample Mean & Standard Deviation.

n = 100

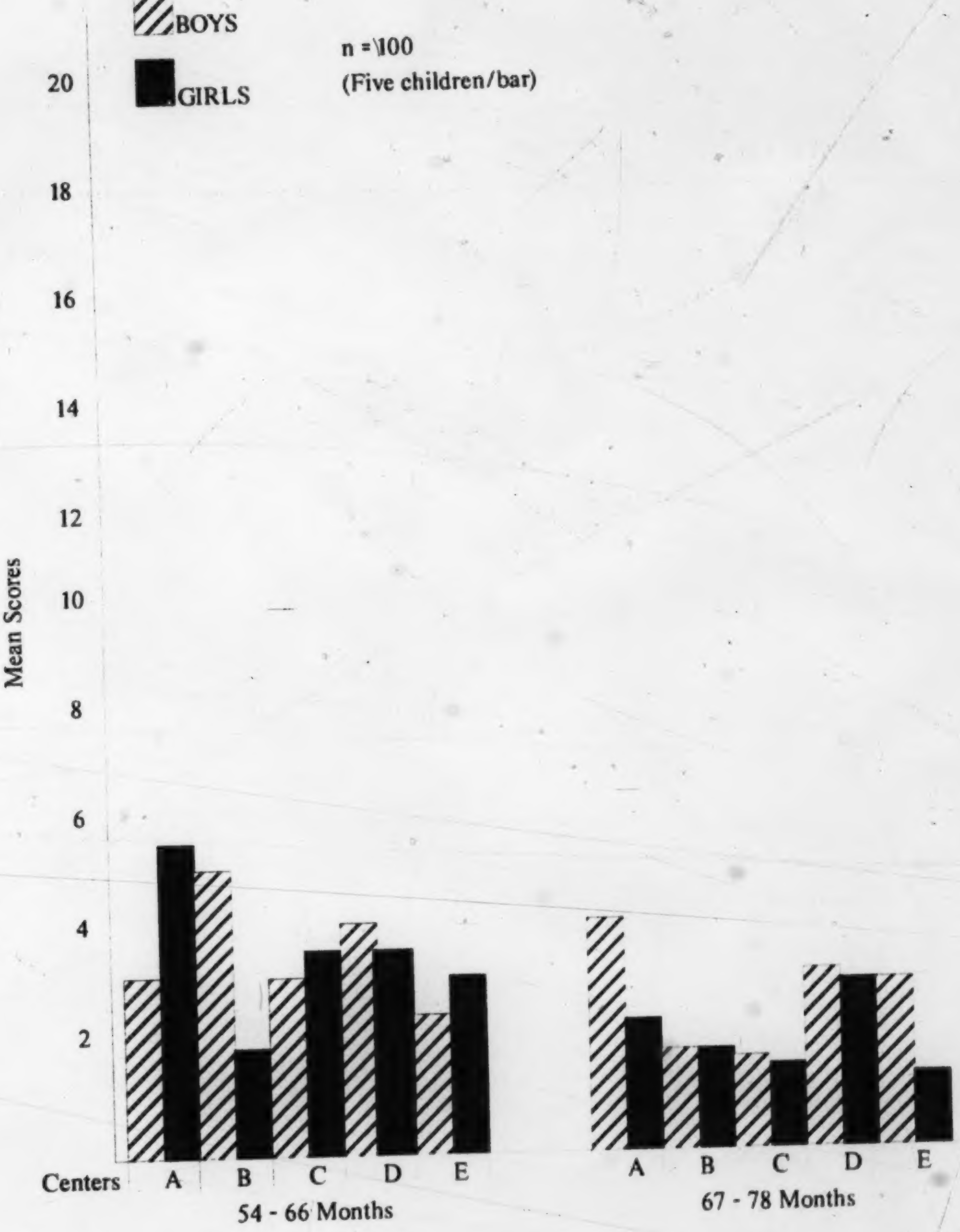

Figure 5.9 Hyperactivity: Mean Scores by Centre, Age, and Sex

Table 5.10

Behaviour Problems: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	2.0 (2.24)	3.40 (3.91)	2.70 (3.09)	4.80 (3.27)	2.40 (1.52)	3.60 (2.72)	3.15 (2.87)
B	2.0 (1.87)	0.40 (0.55)	1.20 (1.55)	1.40 (2.07)	1.0 (2.24)	1.20 (2.04)	1.20 (1.76)
C	1.40 (1.14)	2.60 (2.79)	2.0 (2.11)	1.20 (0.84)	0.20 (0.45)	0.70 (0.82)	1.35 (1.69)
D	4.40 (4.62)	2.60 (3.13)	3.50 (3.84)	3.80 (2.77)	2.20 (1.09)	3.0 (2.16)	3.25 (3.04)
E	2.20 (1.09)	1.80 (1.30)	2.0 (1.15)	3.60 (0.55)	1.60 (1.67)	2.60 (1.58)	2.30 (1.38)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*2.25 (2.37) Total Sample Mean & Standard Deviation.

n = 100

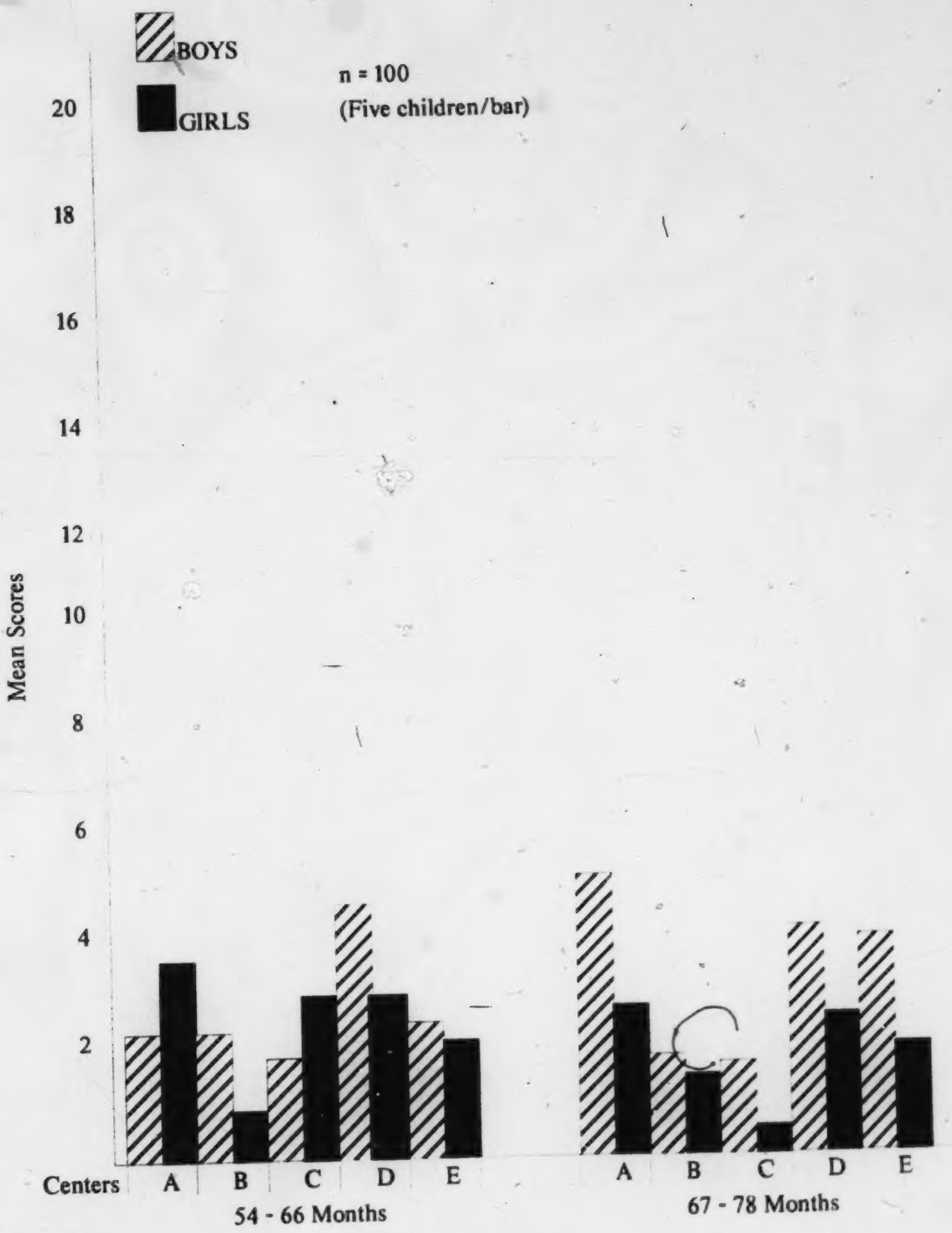

Figure 5.10 Behaviour Problems: Mean Scores by Centre, Age, and Sex

subscale. The mean for the behaviour problems for the five year olds ranged from 1.20 (sd. 1.55) to 3.50 (sd. 3.84), while the means for six year olds ranged from 0.70 (sd. 0.82) to 3.60 (sd. 2.72). An overall examination of the means across the five centres showed that the cases of girls identified as having behaviour problems were comparatively lower than boys in the same age group. The five year olds were identified with significantly greater behaviour problem characteristics than the six year olds.

The most commonly reported behaviour problem characteristics included younger children's feeling that they were being abused by older children, thus the younger children becoming vengeful, demanding attention from adults, sometimes disobeying, and quarrelling with peers during play time.

The last subscale of the MPI concerns the presence of Emotional Problems among the children (see Table 5.11; Figure 5.11). The pattern for emotional problems indicated that the five year old children were identified with more problem symptoms than the six year olds. The rates for Centres D and E were higher than those for Centres A, B and C. The means for the five year olds ranged from 1.90 (sd. 1.37) to 4.10 (sd. 1.59), while those for six year olds ranged from .90 (sd. 1.29) to 2.70 (sd. 1.56). Children in Centre C were identified with the least emotional problem symptoms, while those in Centres D and E were identified

Table 5.11

Emotional Problems: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	3.0 (1.58)	3.20 (1.79)	3.10 (1.59)	2.60 (1.14)	2.80 (0.84)	2.70 (0.95)	2.90 (1.30)
B	3.20 (1.09)	1.80 (1.48)	2.50 (1.43)	2.40 (1.82)	1.20 (1.64)	1.80 (1.75)	2.15 (1.60)
C	2.0 (1.87)	1.80 (0.84)	1.90 (1.37)	1.0 (1.73)	0.80 (0.84)	0.90 (1.29)	1.40 (1.39)
D	4.40 (2.30)	3.60 (0.55)	4.0 (1.63)	1.20 (1.09)	2.0 (0.71)	1.60 (0.97)	2.80 (1.79)
E	4.0 (1.58)	4.20 (1.79)	4.10 (1.59)	3.20 (1.48)	2.20 (1.64)	2.70 (1.56)	3.40 (1.70)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*2.53 (1.68) Total Sample Mean & Standard Deviation.

n = 100

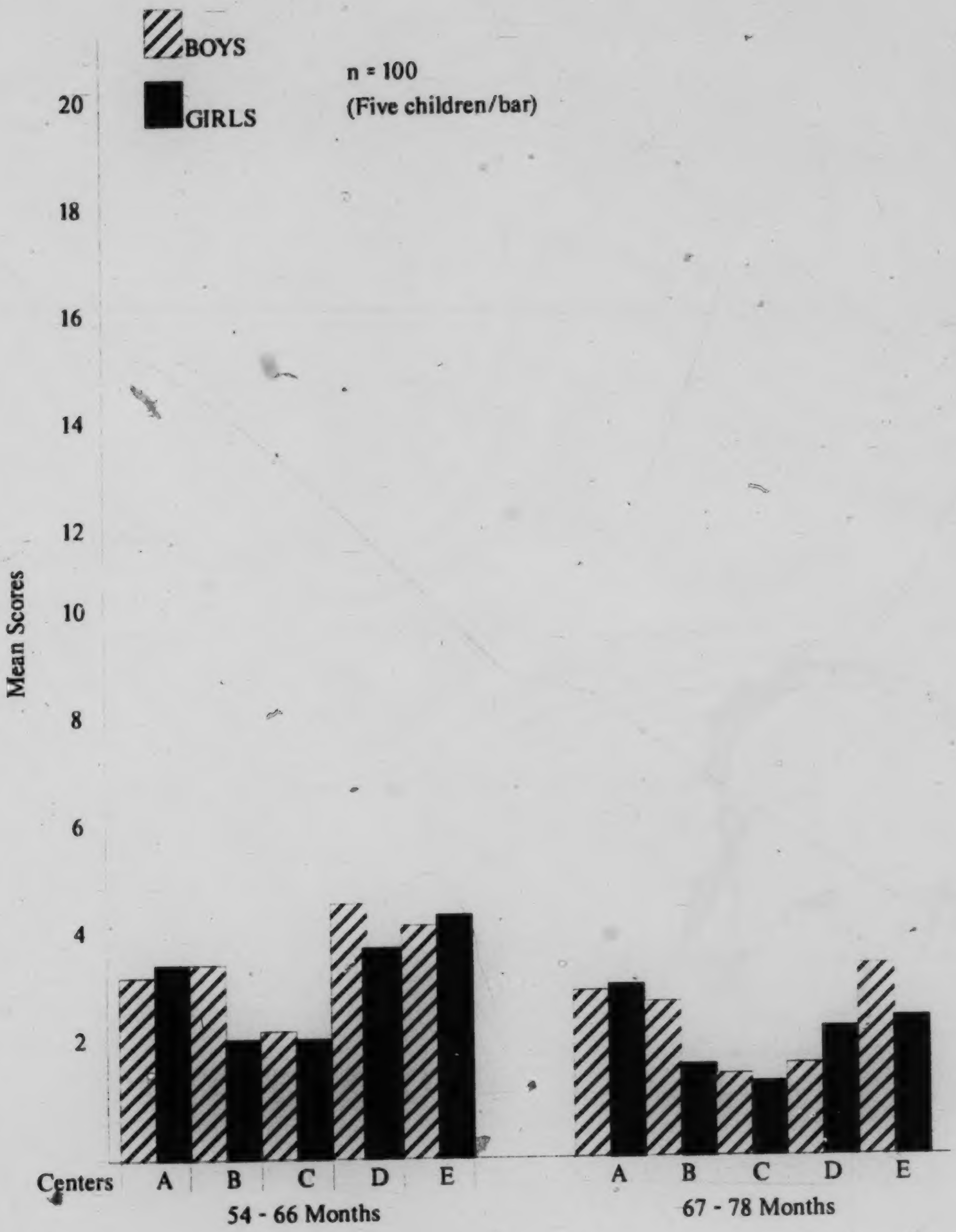

Figure 5.11 Emotional Problems: Mean Scores by Centre, Age, and Sex

with the highest rate. Statistically significant differences ($p < .05$) were observed between means of Centres A, D and E and those of Centres B and C.

The main characteristics of emotional problems observed were associated with seeking help for things that children could do by themselves, feeling ashamed, feeling small, and reluctance to play in groups of other children. The problem symptom items of the MPI require inferencing of behaviour from cultural experiences and insights in contrast to the directly observed functions represented by the items in the developmental subscales. Illustrative examples could easily be recalled with reference to developmental subscales items, but similar illustrations for the problem subscales might be difficult. For this reason, the interpretation of specific behaviour characteristics identifying children as immature, hyperactive, having behaviour problems or emotional problems require insightful understanding of the cultural meanings. The results must therefore be interpreted with caution because many behaviours identified as problematic in Western children might not be such in Tanzania. 7

Question 2

What provisions exist in the family environments for promoting various aspects of child development and learning?

The results obtained from parents are summarized in Tables 5.12 to 5.18 according to the eight subscales of the HOME. Throughout the tables, results were summarized according to centre, age and sex. The subscales include: Stimulation Through Toys, Games and Reading Materials (TGM); Language Stimulation (LAST); Physical Environment (PHY. ENV.); Pride, Affection and Warmth (PAW); Stimulation of Academic Behaviour (SAB); Modelling and Encouragement for Social Maturity (MSM); Variety of Stimulation (VAS); and Physical Punishment (PHY. PUN.).

Table 5.12 presents the means and standard deviations for the Stimulation Through Toys, Games and Reading Materials subscale. An examination of Centres A, B and C indicates that grand means and standard deviations range from 7.15 (sd. 1.0) to 7.95 (sd. 0.89), while those for Centres D and E range from 5.0 (sd. 1.17) to 5.55 (sd. 1.57). The mean for the 100 subjects in the study for the subscale was 6.66 (sd. 1.62). Considering that Centres A, B and C means were higher than the grand mean, and those for Centres D and E were below the grand mean, it would suggest that families from locations with higher means provide children with more stimulation through toys, games

Table 5.12

Stimulation Through Toys, Games and Reading Materials (TGM): Means and Standard Deviations by Centre, Age and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	7.60 (1.14)	7.20 (0.84)	7.40 (0.97)	7.20 (0.84)	7.40 (1.14)	7.30 (0.95)	7.35 (0.93)
B	7.20 (1.48)	7.20 (0.84)	7.20 (1.14)	8.0 (0.71)	7.40 (0.89)	7.70 (0.82)	7.15 (1.0)
C	7.80 (1.30)	7.60 (0.55)	7.70 (0.95)	8.20 (0.84)	8.20 (0.84)	8.20 (0.79)	7.95 (0.89)
D	4.0 (0.70)	7.40 (1.14)	5.70 (2.0)	5.40 (1.14)	5.40 (1.14)	5.40 (1.07)	5.55 (1.57)
E	4.0 (0.71)	5.0 (0.71)	4.50 (0.85)	5.20 (1.30)	5.80 (1.30)	5.50 (1.27)	5.0 (1.17)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*6.66 (1.62) Total Sample Mean & Standard Deviation.

n = 100

and reading materials than do families from locations with low means.

Whereas stimulation for both sexes seemed high and almost equal for Centres A, B and C (range of 7.2 [sd. 1.48]), girls from Centres D and E seemed to receive more stimulation than boys from these centres: range 4.0 (sd. 0.70) to 4.0 (sd. 0.71) compared to 5.0 (sd. 0.71) to 7.40 (sd. 1.14) for girls. There was no overall significant difference in stimulation received by the five and six year olds within centres, except for Centre C whose means are slightly higher for six year olds: 8.20 (sd. 0.84) compared to 7.60 (sd. 0.55) for five year olds.

Interviews with parents from the five centres suggested that parents from Centres A, B and C city environments were, in fact, more educated, had better paying occupations, lived in comparatively more affluent city locations and had higher aspiration for their children's educational achievement than parents from Centres D and E. It was not surprising, therefore, to learn that parents from Centres A, B and C provided children with some educational and play materials. Although parents from Centres D and E expressed strong interest in their children's educational development, this aspiration was not supported by educational material provisions.

The differential educational and play material provisions to children by families from the five nursery school locations could possibly have contributed to children's observed high and low performance among the centres. Children from Centres B and C performed better than those from Centres A, D and E on Conceptual Comprehension, Letter Recognition, Number Comprehension and Memory subscales of the MPI. If these performance differences among children persist during school years, there are greater chances for children from Centres D and E in particular to experience learning problems due to lack of readiness.

Results for Langauge Stimulation activities subscale are summarized in Table 5.13. The means indicate little difference between Centres A, B and C with means and standard deviations ranging between 5.50 (sd. 1.0) and 6.15 (sd. 0.81). Centres D and E had the lowest means, ranging between 4.2 (sd. 1.12) and 4.90 (sd. 0.79), but close within themselves. The standard deviations indicated little variation between families within and between the five centres.

The means, however, indicated statistically significant differences between the five and six year olds. The means for six year olds were ~~generally~~ higher than those of the five year olds, ranging from 3.80 (sd. 1.14) to 5.90 (sd. 0.99) for five year olds and 4.70 (sd. 0.95)

Table 5.13

Language Stimulation: Means and Standard Deviations by Centre, Age and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	4.80 (0.84)	6.0 (0.71)	5.40 (0.97)	5.60 (1.14)	5.60 (1.14)	5.60 (1.07)	5.50 (1.0)
B	5.40 (0.55)	6.40 (1.14)	5.90 (0.99)	6.40 (0.55)	6.40 (0.55)	6.40 (0.52)	6.15 (0.81)
C	5.40 (0.89)	5.40 (0.89)	5.40 (0.84)	6.20 (0.84)	6.20 (0.84)	6.20 (0.79)	5.80 (0.89)
D	4.80 (0.84)	4.60 (0.89)	4.70 (0.82)	5.0 (0.71)	5.20 (0.84)	5.10 (0.74)	4.90 (0.79)
E	3.20 (0.84)	4.40 (1.14)	3.80 (1.14)	4.60 (1.14)	4.80 (0.84)	4.70 (0.95)	4.215 (1.12)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*5.32 (1.14) Total Sample Mean & Standard Deviation.

n = 100

to 6.40 (sd. 0.52) for the six year olds. Whereas the means for six year old boys and girls were almost equal within each centre, the means for five year old girls were slightly higher than those of boys, but the differences were not statistically significant. Overall, however, the differences between sexes were significant: F = 2.28 (p < .03). Across centres, significance differences were observed between the means for Centres A, B, C and those of Centres A and D (F = 7.13; p < .000). Age-wise, significant differences in the means of all five centres were observed between the five and six year olds.

Significant mean differences imply that families within locations of centres with higher means provided more language stimulation activities, while families living in locations with low centre means provided less language stimulation. The significant mean differences between the five and six year old children suggested that older children receive more language stimulation in the family than younger children.

The interview with parents indicated that parents living in Centres A, B and C locations interacted with their children in the evenings. The interactions involved monitoring what the children had done during the day, especially in relation to nursery school learning. The parents also indicated that they encouraged children to tell stories and riddles even though the parents did not tell stories. In the majority of families from Centres D and E, parents indicated that children were left on their own most of the time.

More picture books and children's play materials were available in families with children in centres with high mean scores. All parents in the study reported insistence on children's correct and appropriate language usage in different social contexts. The parents also reported that their children asked different questions; however, the answers given by parents were usually short rather than expanded explanations. There was no evidence to suggest differences in the pattern of verbal exchanges between children and parents of different centre locations. However, traditionally, verbal communication in the families is mostly adult-directed and often confined to specific situations.

The information on children's Physical Environment is presented in Table 5.14. Data on the physical environment indicated that among the aspects assessed by the HOME, Centres A, B and C were above the grand mean of 5.32 (sd. 1.20) compared to means ranging from 5.65 (sd. 0.93) to 6.45 (sd. 0.69). The means for Centres D and E were lower (4.25 [sd. 0.85] to 4.50 [sd. 0.89]) than those for Centres A, B and C. The differences between families within and across the five centre locations did not differ greatly as reflected in the small standard deviations.

Table 5.14

Physical Environment: Safe, Clean, and Conducive to Development

Means and Standard Deviations by Centre, Age and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	4.80 (0.84)	5.20 (0.84)	5.0 (0.82)	6.20 (0.45)	6.40 (0.55)	6.30 (0.48)	5.65 (0.93)
B	4.60 (0.55)	6.60 (0.89)	5.60 (1.26)	5.80 (0.84)	6.0 (0.71)	5.90 (0.74)	5.75 (1.02)
C	6.40 (0.55)	6.60 (0.55)	6.50 (0.53)	6.40 (0.89)	6.40 (0.89)	6.40 (0.84)	6.45 (0.69)
D	4.40 (0.71)	4.0 (0.71)	4.0 (0.67)	4.80 (0.84)	5.20 (0.84)	5.0 (0.82)	4.50 (0.89)
E	4.0 (0.71)	3.80 (0.84)	3.90 (0.74)	4.60 (0.89)	4.60 (0.89)	4.60 (0.84)	4.25 (0.85)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*5.32 (1.20) Total Sample Mean & Standard Deviation.

n = 100

The environments for both six year boys and girls seemed to be quite equal in environmental provision, while for the five year olds, boys were slightly lower than girls. Of the five centres, Centre C seemed to provide the best environmental stimulation to children. Overall, however, three centres provided above-average stimulation and two provided below-average stimulation. The means for Centres A, B and C were significantly different from those of D and E (Scheffe, $p < .05$).

The interview with parents did not reflect significant involvement with their children in environmental characteristics, except in identification of harmful or dangerous objects and animals. Parents frequently warned children against climbing on high levels, trees, ladders, playing with sharp instruments, and throwing objects and nails. All parents indicated that their houses were safe for children's health and comfort/quiet. Many parents, however, reported that the lack of playgrounds for children was a serious problem. In general, children knew some of the common birds, animals and plants within the environment.

The results for Pride, Affection and Warmth subscale are summarized in Table 5.15. The results indicated that the means of families appeared to be similar on this aspect, means ranging from 4.10 (sd. 0.64) to 4.80 (sd. 1.36). Neither centre nor age differences were

Table 5.15

Pride, Affection, and Warmth (PAW): Means and Standard Deviations by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	4.0 (0.71)	4.40 (0.55)	4.20 (0.63)	4.0 (0.71)	4.0 (0.71)	4.0 (0.67)	4.10 (0.64)
B	4.0 (0.71)	4.80 (0.84)	4.40 (0.84)	4.80 (0.84)	4.80 (0.84)	4.80 (0.79)	4.60 (0.82)
C	4.20 (0.84)	3.40 (0.55)	3.80 (0.79)	5.80 (1.09)	5.80 (1.09)	5.80 (1.03)	4.80 (1.36)
D	3.80 (0.84)	4.40 (0.55)	4.10 (0.74)	5.20 (0.84)	4.80 (0.84)	5.0 (0.82)	4.55 (0.89)
E	4.20 (0.84)	3.20 (0.45)	3.70 (0.82)	4.40 (1.14)	4.80 (1.30)	4.60 (1.17)	4.15 (1.09)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*4.44 (1.01) Total Sample Mean & Standard Deviation.

n = 100

significant. It would seem that the items were not appropriate for discriminating family environments on this aspect.

Results for family Stimulation of Academic Behaviour are presented in Table 5.16. The means for Centres A, B and C were high, ranging from 4.25 (sd. 0.72) to 4.55 (sd. 0.51), while the means for Centres D and E were lower, ranging from 3.0 (sd. 0.73) to 3.50 (sd. 0.95). Closer examination of the means for six year olds showed them to be slightly higher than those of five year olds, ranging between 3.20 (sd. 0.42) to 4.60 (sd. 0.55) for six year olds and 2.80 (sd. 0.92) to 4.50 (sd. 0.53) for five year olds. The low standard deviations among the centres suggests minimal family variations on the items.

The mean differences indicated that the means for Centres A, B and C were significantly higher than those for Centres D and E (Scheffe, $p < .05$). The results would thus suggest the presence of family differences within and between centres with regard to providing academic stimulation to children. Greater academic stimulation and provision of educational materials to children was indeed supported by the parental interviews from Centres A, B and C locations. The type of stimulation accorded children was different from that stipulated by the items in the HOME subscale. Little deliberate effort, for example, was observed from parents in urging children to learn names of

Table 5.16

Stimulation of Academic Behaviour (SAB): Means and Standard Deviations by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	*Grand Means
A	3.40 (0.55)	4.60 (0.55)	4.0 (0.82)	4.40 (0.55)	4.60 (0.55)	4.50 (0.53)	4.25 (0.72)
B	3.80 (0.45)	4.20 (0.45)	4.0 (0.47)	4.60 (0.55)	4.60 (0.55)	4.60 (0.52)	4.30 (0.57)
C	4.60 (0.55)	4.40 (0.55)	4.50 (0.53)	4.60 (0.55)	4.60 (0.55)	4.60 (0.55)	4.55 (0.51)
D	3.40 (1.14)	4.0 (1.0)	3.70 (1.05)	3.20 (0.84)	3.40 (0.89)	3.30 (0.82)	3.50 (0.95)
E	2.40 (1.14)	3.20 (0.45)	2.80 (0.92)	3.20 (0.44)	3.20 (0.45)	3.20 (0.42)	3.0 (0.73)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*3.92 (0.91) Total Sample Mean & Standard Deviation.

n = 100

various colours, to practice extended discussion, or to learn positions of things such as up, down, small or big. Learning of these activities was determined by activities/tasks at hand. Although there was little systematic direction for children to read, there was deliberate guidance for children to learn the number system. It would appear that parents recognized the importance of this skill in enabling children to carry out adult instructions accurately.

It was surprising to discover that results from Modelling and Encouragement of Social Maturity subscale (see Table 5.17) were neither significantly different within centres, nor between sexes. The overall means ranged from 3.20 (sd. 0.77) to 3.65 (sd. 0.49). Minimal mean dispersions were observed as reflected in the very close standard deviations across centres and age. The results signalled that the items could not discriminate activity variations among families from the five centres.

Discussions with parents from the five centres indicated that parents trained children in appropriate behaviours in concrete situations, for example, when children used inappropriate language or acted rudely or defiantly toward adults, or when they showed aggressive behaviour. Most commonly, children were trained through the use of parallel examples of behaviour and the consequences to the individual. Modelling was

Table 5.17

Modelling and Encouragement of Social Maturity (MSM): Means and Standard Deviations by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
A	3.40 (0.55)	3.60 (0.55)	3.50 (0.53)	3.80 (0.45)	3.80 (0.45)	3.80 (0.42)	3.65 (0.49)
B	3.40 (0.52)	3.40 (0.55)	3.40 (0.52)	3.40 (0.55)	3.60 (0.55)	3.50 (0.53)	3.45 (0.51)
C	4.0 (0.71)	3.40 (0.55)	3.70 (0.67)	3.60 (0.55)	3.60 (0.55)	3.60 (0.52)	3.65 (0.59)
D	3.40 (1.14)	3.40 (0.55)	3.40 (0.84)	3.0 (0.71)	3.0 (0.71)	3.0 (0.67)	3.20 (0.77)
E	3.20 (0.45)	3.20 (0.45)	3.20 (0.42)	3.40 (0.55)	3.40 (0.55)	3.40 (0.52)	3.30 (0.47)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*3.45 (0.59) Total Sample Mean & Standard Deviation.

n = 100

predominantly through prohibitions "Don't do that, it's bad or dangerous," "Stop that, you'll get hurt" or "You'll hurt yourself." On some occasions direct punishment was applied. Immature behaviour symptoms, such as crying or unwarranted insistence by children to have their way, were handled through punishment, usually with the cane or severe reprimand.

The interviews, however, indicated that, despite the restrictions, children were free to express themselves to parents or other adults in the family at any time concerning problems or difficulties. Contrary to this freedom of expression for children, parents in some families had little time to listen to children's general talk, unless the discussion was initiated by adults. An old theory held by parents was that encouraging children to talk too much would make them tale-tellers, an aspect of behaviour strongly discouraged in the families under observation -- the tongue has fire. If let loose, it burns and destroys human relations and lives. Its freedom must be controlled.

Results for the Variety Stimulation subscale appear in Table 5.18. Families from Centres A, B and C seemed to provide children with more variety of stimulation than those from Centres D and E. The means for Centres A, B and C ranged from 6.65 (sd. 1.23) to 7.40 (sd. 1.23), while those for the low performing centres, Centres D and E,

Table 5.18

Variety of Stimulation (VAS): Means and Standard Deviations by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
1	5.20 (0.84)	6.40 (0.55)	5.80 (0.92)	7.60 (0.55)	7.60 (0.55)	7.60 (0.52)	6.70 (1.17)
2	6.20 (1.30)	7.20 (0.84)	6.70 (1.16)	6.40 (1.52)	6.80 (1.30)	6.60 (1.35)	6.65 (1.23)
3	7.0 (0.71)	6.60 (1.52)	6.80 (1.14)	8.20 (0.84)	7.80 (1.30)	8.0 (1.0)	7.40 (1.23)
4	4.80 (0.84)	4.80 (0.84)	4.80 (0.79)	6.40 (1.14)	6.40 (1.14)	6.40 (1.07)	5.60 (1.23)
5	3.80 (0.84)	4.80 (0.84)	4.30 (0.95)	5.0 (1.58)	5.20 (1.48)	5.10 (1.45)	4.70 (1.26)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*6.21 (1.53) Total Sample Mean & Standard Deviation:

n = 100

ranged from 4.70 (sd. 1.26) to 5.60 (sd. 1.23). The high performing centres suggested that families provide children with a variety of stimulation above the grand mean (6.21 [sd. 1.53]) of the five centres. The means for Centre C suggested that parents provided children with the highest stimulation (x = 7.40 [sd. 1.23]), while parents from Centre E seemed to provide the least stimulation to children (x = 4.70 [sd. 1.26]).

Significant mean differences were observed between Centres A, B and C and Centres D and E (Scheffe, $p < .05$). Evidence in support of the extent that families from the five centres provided different kinds of social, academic, language and cognitive stimulation has already been presented earlier. According to the specific items related to Variety of Stimulation, parents indicated through the interviews that they regularly visited relatives and close friends with children, that they permitted children to attend religious, political and traditional celebrations within the community, and that some parents took children to places of interest such as historical sites, including the village museum, the national museum and the farmers' day celebrations.

Parents' explanations also indicated that their communication with children was governed by clear verbal directions and instructions, and that children were always encouraged to listen to and look at people and things carefully. In general, however, the overall provision of Variety of Stimulation to children through appropriate materials in different families in the society was limited by family incomes and general availability of such materials in the country.

In summary, the results showed that Centres A, B and C families seemed to differ significantly in the extent to which they provided children with various types of environmental stimulation within their homes. Table 5.19 summarizes the areas in which overall significant differences were observed in family stimulation and provisions from the five centres. Centres A, B and C family stimulation and provisions always exceeded the average mean provisions in the one hundred families as indicated by the grand means for each scale in comparison with individual centre means. Despite the high and low performances observed between Centres A, B and C in comparison to Centres D and E, respectively, the small standard deviations across the five centres and between the two age groups on all eight environmental subscales suggested the presence of minimal variations in the overall amount of variety of stimulation which families provide for their children.

Across age groups, however, statistically significant variations were observed. A similar pattern of significant differences was observed across the five

Table 5.19
Summary of Scheffe Test of Statistically Significant Mean Differences Between the Five Nursery School Centres on HOME Subscales

Scale	Centres	Means	Difference	P
TGM	B and D	7.15 – 5.55	1.60	< .05
	B and E	7.15 – 5.00	2.15	< .05
	C and D	7.95 – 5.55	2.40	< .05
	C and E	7.95 – 5.00	2.95	< .05
LAST	A and D	5.50 – 4.90	.60	< .05
	B and A	6.15 – 5.50	.65	< .05
	B and D	6.15 – 4.90	1.25	< .05
	C and D	5.80 – 4.20	1.60	< .05
PHY ENV	A and D	5.65 – 4.50	1.15	< .05
	A and E	5.65 – 4.25	1.40	< .05
	B and D	5.75 – 4.50	1.25	< .05
	B and E	5.75 – 4.25	1.50	< .05
	C and A	6.45 – 5.65	.80	< .05
	C and D	6.45 – 4.50	1.95	< .05
	C and E	6.45 – 4.25	2.20	< .05
PAW	– Non-significant			
SAB	A and D	4.25 – 3.50	.75	< .05
	A and E	4.25 – 3.00	1.25	< .05
	B and D	4.30 – 3.50	.80	< .05
	B and E	4.30 – 3.00	1.30	< .05
	C and D	4.55 – 3.50	1.05	< .05
	C and E	4.55 – 3.00	1.55	< .05
MSM	– Non-significant			
VAS	A and D	6.70 – 5.60	1.10	< .05
	A and E	6.70 – 4.70	2.00	< .05
	B and E	6.65 – 4.70	1.95	< .05
	C and D	7.40 – 5.60	1.80	< .05
	C and E	7.40 – 4.70	2.70	< .05
VOCAB	– Non-significant			
QUANT	B and A	8.70 – 7.70	1.00	< .05
	B and E	8.70 – 7.50	1.20	< .05
	C and E	8.75 – 7.50	1.25	< .05
MEM	B and E	8.70 – 7.50	1.20	< .05
	C and E	8.75 – 7.50	1.25	< .05

centres, with Centres A, B and C being identified as high performers and Centres D and E as low performers. It was not a surprise to find that interaction effects between centre and sex or centre and age were non-significant; neither were the findings of non-significant differences between sex and age or centre, sex and age. There was no initial assumption of significant differences between children of both sexes within centres or between centre and children's age. The results of significant centre differences were initially a surprise, even though significant differences between age were expected in conformity with research evidence from children's developmental literature.

The overall implications of the significant differences observed in the results from different centres would suggest differences in the opportunities which families accord children to develop various functional skill levels. The skills of interest in this study involve children's language use, children's knowledge of their environment, and social situations. Children's quantitative reasoning and knowledge of letter recognition are of great importance to school learning. The next section analyses the interrelationships between the different variables in the study.

Vocabulary, Quantitative Reasoning and Memory Test Results

The results for Vocabulary, Quantitative Reasoning and Memory Tests are summarized in Tables 5.20 to 5.22. the Vocabulary results (see Table 5.20; Figure 5.12) indicate that the means from the five centres ranged from 0.55 (sd. 1.88) to 11.80 (sd. 1.94), implying that small variations were observed among children from the five centres. The means for quantitative reasoning test (see Table 5.21; Figure 5.13) ranged from 7.50 (sd. 1.54) to 8.70 (sd. 2.03), with highest means from Centres B, C and D. The means from Centres A and E are almost equal at 7.70 (sd. 2.10) and 7.50 (sd. 1.54), respectively. The means for quantitative reasoning indicated that children from the five centres differed more on this skill than on vocabulary.

The memory test results (see Table 5.22; Figure 5.14) indicate a close range, 7.10 (sd. 2.15) to 8.0 (sd. 2.08), for children from Centres A, B, C and D, whereas the mean for Centre E was comparatively low at 6.65 (sd. 1.42). The MANOVA analysis of F-tests for significant mean differences (Tables 5.23 to 5.25) indicated that there were no overall statistically significant differences in the vocabulary means (F, 2.25 [4,80], p < .07). However, statistically significant overall mean differences were observed among the centres and age groups for quantitative

Table 5.20

Vocabulary: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
1	9.40 (1.14)	8.40 (1.94)	8.90 (1.59)	11.80 (0.84)	13.60 (1.14)	12.70 (1.34)	10.80 (2.42)
2	9.60 (1.52)	9.0 (1.0)	9.30 (1.25)	14.0 (2.83)	13.0 (1.22)	13.50 (2.12)	11.40 (2.74)
3	10.80 (1.30)	10.0 (1.41)	10.40 (1.35)	13.0 (1.22)	13.40 (1.52)	13.20 (1.32)	11.80 (1.94)
4	8.40 (1.52)	9.80 (1.64)	9.10 (1.66)	13.20 (0.84)	12.60 (1.14)	12.90 (0.99)	11.0 (2.36)
5	8.80 (1.09)	10.60 (1.58)	9.40 (1.43)	11.60 (1.14)	11.80 (2.05)	11.70 (1.57)	10.55 (1.88)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*11.11 (2.29) Total Sample Mean & Standard Deviation.

n = 100

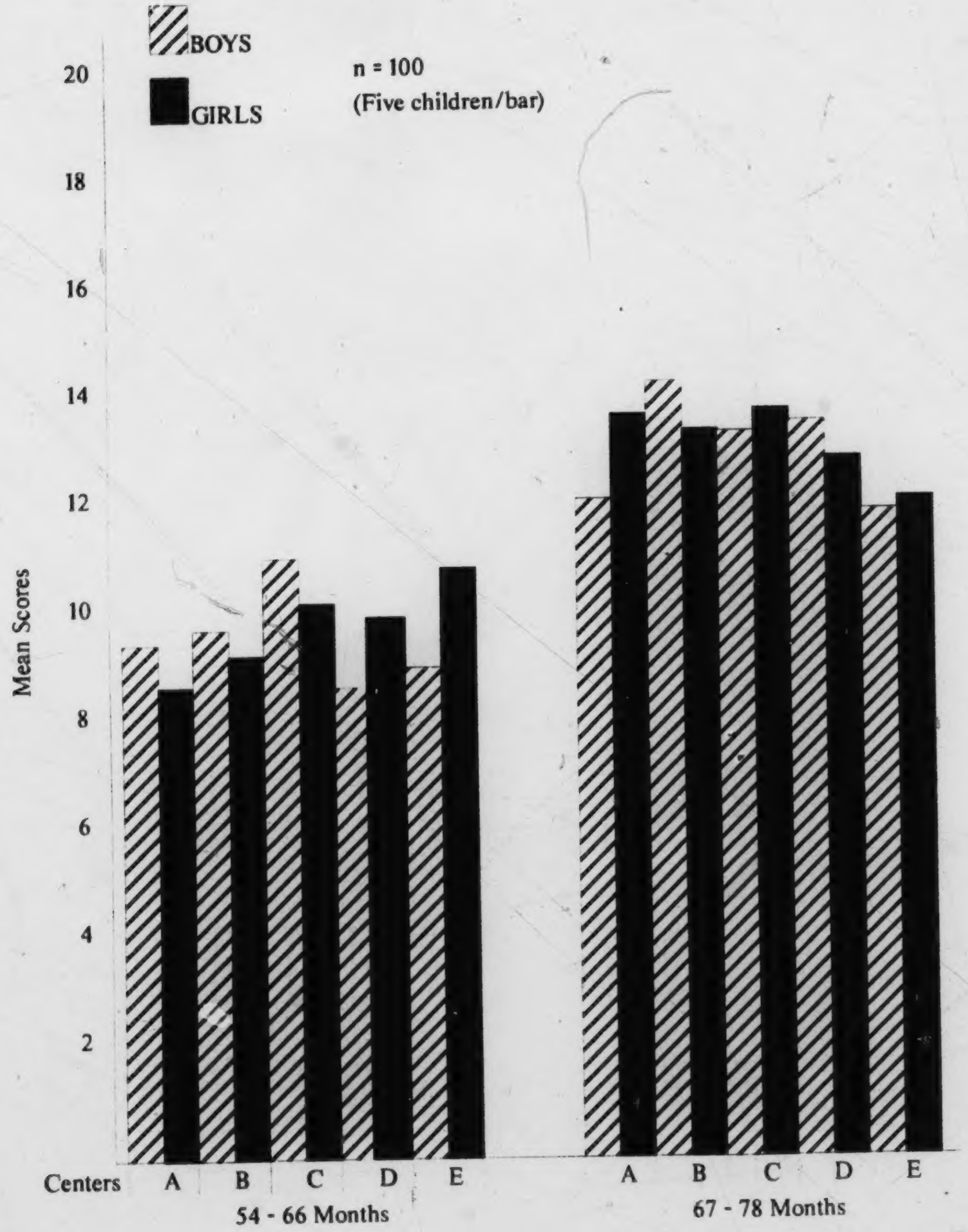

Figure 5.12 Vocabulary: Mean Scores by Centre, Age and Sex

Table 5.21

Quantitative Reasoning: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
1	6.80 (0.84)	5.60 (1.34)	6.20 (1.23)	8.0 (1.22)	10.40 (1.14)	9.20 (1.69)	7.70 (2.10)
2	7.40 (0.55)	6.60 (1.14)	7.0 (0.94)	10.80 (1.30)	10.0 (1.0)	10.40 (1.17)	8.70 (2.03)
3	7.20 (0.84)	6.80 (1.10)	7.0 (0.94)	10.60 (1.67)	10.40 (2.07)	10.50 (1.78)	8.75 (2.27)
4	6.60 (1.14)	7.0 (0.71)	6.80 (0.92)	10.60 (0.89)	9.0 (1.22)	9.80 (1.32)	8.30 (1.89)
5	6.20 (0.84)	6.80 (0.84)	6.50 (0.85)	8.40 (1.14)	8.60 (0.82)	8.50 (1.43)	7.50 (1.54)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*8.19 (2.01) Total Sample Mean & Standard Deviation.

n = 100

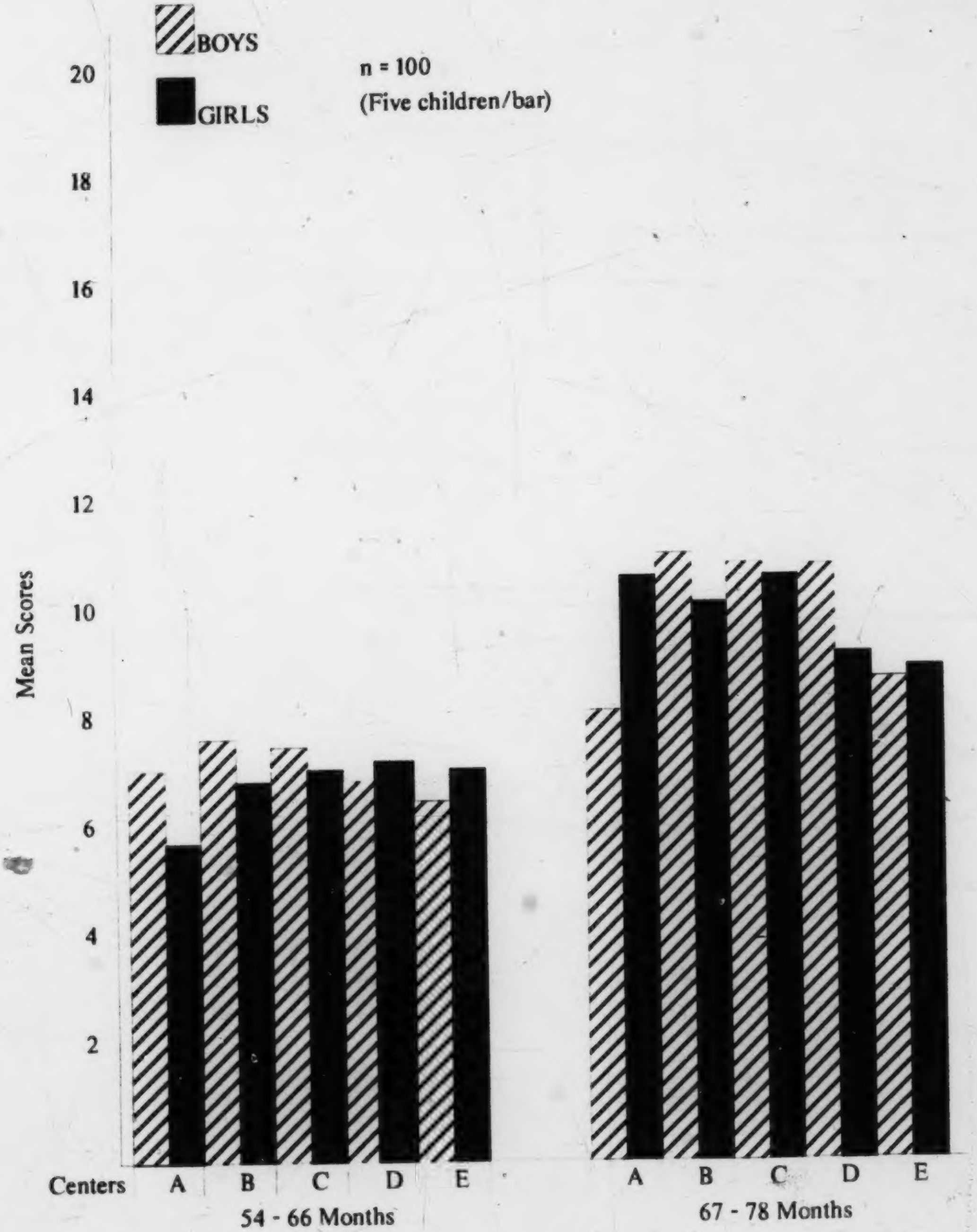

Figure 5.13 Quantitative Reasoning: Mean Scores by Centre, Age and Sex

Table 5.22

Memory Functioning: Mean Scores by Centre, Age, and Sex

	54 – 66 Months			67 – 78 Months			
Centre	Boys	Girls	Mean	Boys	Girls	Mean	Grand Means
1	5.80 (0.84)	5.60 (1.14)	5.70 (0.95)	9.20 (1.30)	9.80 (0.84)	9.0 (1.33)	7.35 (2.03)
2	6.0 (0.71)	6.0 (0.71)	6.0 (2.10)	9.60 (1.14)	10.0 (0.71)	9.80)0.92)	7.90 (2.10)
3	7.0 (1.0)	6.0 (1.22)	6.50 (1.18)	9.0 (2.0)	10.0 (1.22)	9.50 (1.65)	8.0 (2.08)
4	4.80 (0.84)	5.80 (1.10)	5.30 (1.06)	9.60 (0.55)	8.20 (1.30)	8.90 (1.20)	7.10 (2.15)
5	5.60 (1.14)	6.0 (1.0)	5.80 (1.03)	7.40 (1.52)	7.60 (1.14)	7.50 (1.27)	6.65 (1.42)
	n = 5	n = 5	n = 10	n = 5	n = 5	n = 10	n = 20

*7.40 (2.0) Total Sample Mean & Standard Deviation.

n = 100

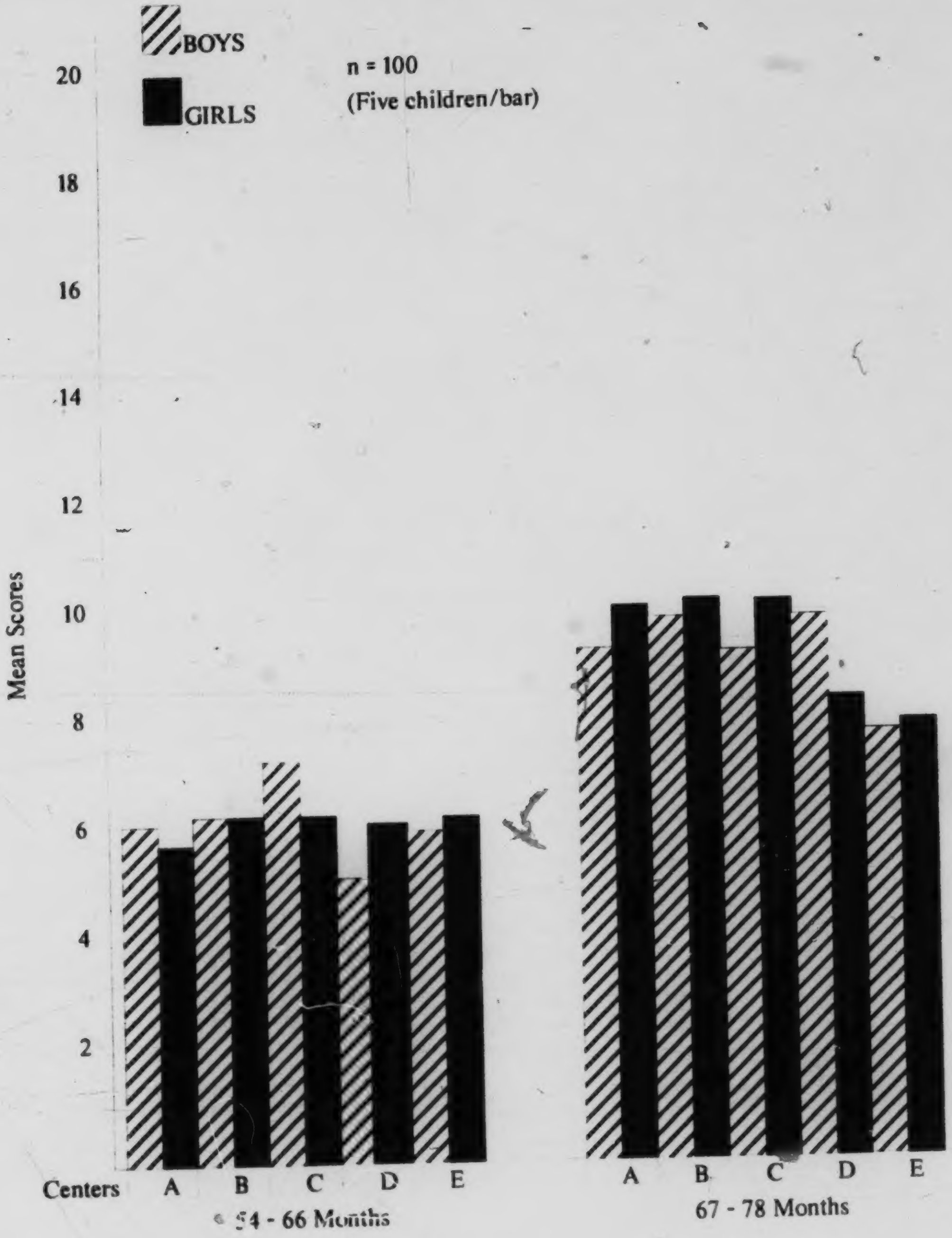

Figure 5.14 Memory Functioning: Mean Scores by Centre, Age and Sex

Table 5.23

Vocabulary, Quantitative Reasoning and Memory Tests Multivariate Analysis, Wilk's LAMBDA: Centre

Univariate F–Ratios

Variable	F–Ratio	DF1	DF2	PROB.
VOCAB	2.25	4	80	0.07
QUANT	4.54	4	80	0.002
MEM	5.06	4	80	0.001

Table 5.24

Vocabulary, Quantitative Reasoning and Memory Tests Multivariate Analysis, Wilk's LAMBDA: Age (Year)

Univariate F–Ratios

Variable	F–Ratio	DF1	DF2	PROB.
VOCAB	131.01	1	80	0.000
QUANT	154.71	1	80	0.000
MEM	189..73	1	80	0.000

Table 5.25

Vocabulary, Quantitative Reasoning and Memory Tests Multivariate Analysis, Wilk's LAMBDA: Centre/Sex/Age(yr)

Univariate F-Ratios

Variable	F-Ratio	DF1	DF2	PROB.
VOCAB	2.06	4	80	0.094
QUANT	3.65	4	80	0.009
MEM	3.17	4	80	0.018

reasoning (F, 4.54 [4,80], p < .00). As well, statistically significant overall mean differences among the centres and age groups were found for the memory results (F, 5.06 [4,80], p < .00).

The overall interaction effects were non-significant for centre and sex (F, 1.31, p < .13) between centre and age (F, 1.42, p < 0.15); and between centre and sex (F, .80, p < .64), sex and age (F, .18, p < .90), differences were statistically significant for centre, age and sex (F, 2.000, p < .02).

A post hoc Scheffe test for the specific statistically significant means indicated that for the Quantitative Reasoning test, the mean differences for Centres A and B (1.0), Centres B and E (1.20), and means for Centres C and E (1.25) were significant at p < .05. In the case of statistically significant means for memory, a post hoc analysis indicated that the differences between means for Centres B and E and those of Centres C and E were statistically significant.

Summary of the Results for the MPI, the HOME and the Tests

Question 3

Do the two inventories, the MPI and the HOME, differentiate children's developmental functioning and the characteristics of their home environments?

MANOVA tests conducted on the different means of the MPI, the HOME and the Test results indicated statistically significant F-values among the centres at a multivariate level (see Table 5.26), F, 2.88 ($p < .000$) for the MPI subscales. The results also indicated that the univariate F-ratios were significant for all subscales ($p < .05$) ranging from Fine Motor down to Emotional Problems.

Significant F-values for Age (see Table 5.27) were also observed from the multivariate analysis levels, F, 13.99 ($p < .000$), and for all subscales at the univariate analysis level ($p < .05$), except for the Behaviour Problem subscale F, 0.02 (1,80), $p < .89$. The multivariate and univariate analysis did not produce statistically significant values for sex.

The interaction effects between centre and sex were non-significant at both the multivariate level F 1.45 ($p = .39$) and at the univariate level ($p > .05$) for all subscales. The interaction between age and sex was non-significant at the multivariate level of F,1.74 ($p = 0.08$) and at the univariate level ($p > .05$), except for Expressive Language, F,5.09 (1,80), $p < .026$.

The statistically significant differences observed between the means for the MPI subscales for the five centres and the two age groups (five and six year olds) suggest that the subscale items differentiate children's developmental functioning and detect the presence of

Table 5.26

Significant F–Values for MPI Multivariate Analysis, Wilk's LAMBDA (Main Effects and Interaction Effects): Centre

Wilk's LAMBDA Multivariate Significance: F,2.88 (p < .000)

Univariate F–Ratios

Variable	F–Ratio	DF1	DF2	PROB.
SH	5.92	4	80	0.0003
FM	16.31	4	80	0.0000
EL	2.76	4	80	0.0332
CO	8.25	4	80	0.0000
ME	3.78	4	80	0.0072
LR	8.66	4	80	0.0000
NC	4.82	4	80	0.0016
IM	4.53	4	80	0.0024
HY	2.61	4	80	0.0416
BP	3.64	4	80	0.0089
EP	5.57	4	80	0.0005

Table 5.27

Significant F–Values for MPI Multivariate Analysis, Wilk's LAMBDA (Main Effects and Interaction Effects): Age(yr.)

Wilk's LAMBDA Multivariate Significance: F,13.99 (p < .000)

Univariate F–Ratios

Variable	F–Ratio	DF1	DF2	PROB.
SH	86.07	1	80	0.0000
FM	101.911	1	80	0.0000
EL	33.62	1	80	0.0000
CO	52.26	1	80	0.0000
ME	32.18	1	80	0.0000
LR	58.28	1	80	0.0000
NC	18.98	1	80	0.0000
IM	5.45	1	80	0.0220
HY	13.12	1	80	0.0005
BP	0.02	1	80	0.8949
EP	16.23	1	80	0.0001

symptom problems. From the results obtained, evidence from the statistical significance tests and the interviews with parents, indeed, supported the observation that six year olds functioned at a much higher level in the family environment than five year olds.

The post hoc analysis of specific mean differences with the Scheffe test indicated that there were significant differences between different MPI developmental subscale means for Centres A, B and C in comparison to the means for Centres D and E (see Summary Table 5.28), implying that the activities and functional levels of children from the five nursery school locations differed to some extent. The interview discussions presented earlier supported the presence of different levels of parent involvement in children's activities in different centre locations.

The Scheffe test also indicated the presence of statistically different means for different subscales of the HOME (see Summary Table 5.19). According to the high scores observed in Centres A, B and C, and the low scores of Centres D and E. These differences suggest the presence of family variations in the amount of stimulation children received for general development and learning, but specifically for academic readiness. The statistical significance reflecting the presence of family differences was also supported by the interview information obtained from parents from the five city locations. Generally, more

Table 5.28
Summary of Scheffe Test of Statistically Significant Mean Differences Between the Five Nursery School Centres on MPI Subscales

Scale	Centres	Means	Difference	P
SH	B and A	16.50 – 12.75	3.75	< .05
	B and D	16.50 – 12.55	3.95	< .05
	B and E	16.50 – 12.65	3.85	< .05
FM	B and A	12.45 – 8.11	4.34	< .05
	B and C	12.45 – 9.05	3.40	< .05
	B and D	12.45 – 5.80	6.65	< .05
	C and D	9.05 – 5.80	3.25	< .05
	C and E	9.05 – 5.15	3.90	< .05
EL	– No significant difference			
CO	B and A	24.60 – 19.65	4.95	< .05
	B and D	24.60 – 19.00	5.60	< .05
	B and E	24.60 – 18.55	6.05	< .05
	C and E	23.05 – 18.55	4.50	< .05
ME	B and D	11.40 – 8.70	2.70	< .05
	B and E	11.40 – 8.70	2.70	< .05
LR	B and A	4.40 – 2.55	1.85	< .05
	B and D	4.40 – 2.00	2.40	< .05
	B and E	4.40 – 1.70	2.70	< .05
	C and E	3.70 – 1.70	2.00	< .05
NC	B and D	6.55 – 5.10	1.45	< .05
	B and E	6.55 – 5.30	1.25	< .05
IM	E and B	6.20 – 3.90	2.30	< .05
	E and C	6.20 – 3.10	3.10	< .05
HY	– Non-significant			
BP	– Non-significant			
EP	E and B	3.40 – 2.15	1.25	< .05
	E and C	3.40 – 1.40	2.00	< .05

supportive family environments and interactions were reported by parents with children ~~in~~ Centres A, B and C than parents with children in Centres D and E.

Overall, statistically significant mean differences among the five centres for Quantitative Reasoning and Memory have been reported (Tables 5.23 to 5.25). Also reported were the overall statistically significant age differences among the mean performances in Vocabulary, Quantitative Reasoning and Memory tests. It could reasonably be inferred from the presence of statistically significant differences in the three test means across centres and age groups that children's encounters from Centres A, B, C and D locations provide richer stimulating experiences than children in Centre E locations. In fact, the interview data indicated that families in all five centre locations encouraged their children in various ways to master functional quantitative skills, language and memory for different things.

Question 4

Were the two inventories appropriate for exploring ecological validity of the Tanzanian child's developmental functioning and the characteristics of the family environment?

The ecological validity of the items on the MPI and the HOME was established in two ways. First, the nursery school teachers examined each item thoroughly during the inter-observer reliability training and then applied the inventories to study the ten selected families. Through the teachers' own experience and the feedback from parents, substitutions of concepts found inappropriate for the Tanzanian environment were made. Examples from the MPI items included "shoes" (instead of boots), "spoon" (instead of table knife), "straight line" (instead of single line pattern), "colouring" (instead of colours within lines), "write" (instead of print), "Clever Hare" (instead of "Little Bo Peep"), "marbles" and "mzinga" (instead of table games).

The interviews with parents also helped to identify items, related to children's everyday functioning, that were not represented on the inventories; a summary of these inventories is provided in a subsequent section. During the statistical analysis of the data, attempts to compare the MPI and the HOME subscales within each inventory were conducted. The purpose was to determine whether the various subscales within the inventory correlated significantly with one another. Significant correlations and inter-correlations of items between the inventories would indicate whether the items or scales assessed or measured similar skills. In this way, the scales would validate the information obtained through the significantly correlated scales.

The inter-correlations among various subscales of the MPI, the HOME and the Vocabulary, Quantitative Reasoning and Memory subtests were examined to determine the presence of consistent relationships among the different variables of children's developmental functioning and those of the home environment. The analysis first dealt with correlations within individual subscales of the MPI and the HOME, and then with the inter-correlations among the MPI, the HOME and the three tests of cognitive skills. Only the statistically significant correlations were addressed from the 22 dependent variables. Significant correlations at the alpha levels of p < .01, .00, .000 are reported in pairs of the interrelated subscales (see Table 5.29[a], 5.29[b]). The table shows that the MPI development functioning subscale's intercorrelations ranged from medium to high r-values, ranging from r = .55 to r = .85. These correlational values imply that the items in the different subscales were measuring skills which were closely related to children's developmental functioning.

The high intercorrelational values observed between the MPI developmental subscales and the three cognitive tests, Vocabulary, Quantitative Reasoning and Memory, implies that the results of parent interviews on their children's knowledge and functioning in the various domains were valid.

Table 5.29a

Defintions of Variables

MPI – Minnesota Preschool Inventory

1. SH – Self Help
2. FM – Fine Motor
3. EL – Expressive Language
4. CO – Conceptual Comprehension
5. ME – Memory
6. LR – Letter Recognition
7. NC – Number Comprehension
8. IM – Immaturity
9. HYP – Hyperactivity
10. BP – Behaviour Problems
11. EP – Emotional Problems

The HOME Inventory

12. TGM – Stimulation Through Toys, Games and Reading Materials
13. LAST – Language Stimulation
14. PHY ENV – Physical Environment
15. PAW – Pride, Affection and Warmth
16. SAB – Stimulation of Academic Behaviour
17. MSM – Modelling and Encouraging Social Maturity
18. VAS – Variety of Stimulation
19. PHY PUN – Physical Punishment

20. VOCAB – Vocabulary
21. QUANT – Quantitative Reasoning
22. MEM – Memory

Table 5.29b
Correlation Matrix for MPI, the HOME and the Vocabulary, Quantitative Reasoning and Memory Tests

	SH	FM	EL	C0	ME	LR	NC	IM	HY	BP	EP	TGM
SH	1.00											
FM	.82***	1.00										
EL	.58***	.60***	1.00									
CO	.79***	.82***	.73***	1.00								
ME	.70***	.76***	.72***	.79***	1.00							
LR	.70***	.85***	.55***	.80***	.81***	1.00						
NC	.69***	.72***	.61***	.74***	.74***	.64***	1.00					
IM	-.41*	-.40*	-.43*	-.53**	-.48**	-.37*	-.42*	1.00				
HY	--	--	-.36*	--	-.41*	--	--	.33*	1.00			
BP	--	--	--	--	--	--	--	.47**	.58***	1.00		
EP	-.39*	-.45*	-.42*	-.47***	-.47**	-.44*	-.43*	.63***	.42*	.46***	1.00	
TGM	--	--	--	--	--	--	--	--	--	--	--	1.00
LAST	--	.54***	--	.42*	.38*	.43*	--	--	--	--	--	.52**
PHY ENV	--	.42*	--	--	--	.41*	--	--	--	--	-.41*	.50**
PAW	--	--	--	--	--	--	--	--	--	--	--	--
SAB	--	--	--	--	--	--	--	--	--	--	--	.49**
MSM	--	--	--	--	--	--	--	--	--	--	--	--
VAS	--	.42*	--	.36*	.37*	.41*	--	--	--	--	--	.40*
PHY PUN	--	--	--	--	--	--	--	--	--	--	--	--
VOCAB	.70***	.67***	.58***	.65***	.57***	.60***	.52***	-.37*	--	--	-.41*	--
QUANT	.70***	.72***	.58***	.65***	.63***	.64***	.51***	-.38*	--	--	-.41*	--
MEM	.72***	.75***	.60***	.67***	.66***	.66***	.53***	-.36*	--	--	-.39*	--

Table 5.29b (cont'd)

	LAST	PHY ENV	PAW	SAB	MSM	VAS	PHY PUN	VO-CAB	QUANT	MEM
LAST	1.00									
PHY ENV	.57***	1.00								
PAW	--	--	1.00							
SAB	.46**	.48**	--	1.00						
MSM	--	--	--	--	1.00					
VAS	.49**	.59***	--	.47**	--	1.00				
PHY PUN	--	--	--	--	--	--	1.00			
VOCAB	--	--	--	--	--	--	--	1.00		
QUANT	--	--	--	--	--	.35*	--	.82***	1.00	
MEM	--	--	--	--	--	.43*	--	.81***	.87***	1.00

*** P < .000
** P < .00
* P < .01

Medium to low intercorrelational values observed between the HOME subscales and the MPI subscales indicated that the two inventories were actually assessing different aspects of children's developmental functioning. The Variety of Stimulation, Fine Motor Skills and Academic Stimulation were moderately correlated. The dominance of medium to low (r = .43 to r = .59) correlational values between the HOME subscales, which should ideally be high, raises suspicion concerning the appropriateness of the HOME for measuring the characteriwstic of the home environment in Tanzania. The items in the HOME subscale might not be describing the characteristics of the Tanzanian family environment.

A Varimax Rotation Factor analysis test performed to determine the cluster of subscales tending to be associated together produced three types of factor groupings from the 22 dependent variables. Factor one, "Children's Developmental Functioning," comprised the seven MPI developmental subscales which tended to be highly associated together. The subscales and their associations were Self Help (.85), Fine Motor (.85), Memory (.82), Letter Recognition (.80), Expressive Language (.75), Number Comprehension (.78), Comprehension (.66), Vocabulary (.78), Quantitative (.81), and Memory (.81). The association among the MPI developmental subscales with the three cognitive tests together could explain a greater part of the variance related to children's developmental functioning of the sample involved in the study. The high association of the items within the cluster could also suggest the feasibility of further exploration of each variable in combination with others to determine the most potent factors contributing to children's developmental functioning in the Tanzanian socio-cultural environment.

The second factor was labelled "The Home Environment Stimulation Factor," comprised five of the eight HOME subscales. The subscales and their contributions to explaining home environment characteristics and stimulation were the Physical Environment (.78), Language Stimulation (.71), Stimulation of Academic Behaviour (.75), Toys, Games and Reading Materials (.74), and Variety of Stimulation (.67). Each of the five subscales explain a greater part of the variance associated with the characteristics of children's home environment stimulation. Further explorations of the influence of each of these variables of the modified version of the HOME might lead to the identification of the strongest contributor to children's environmental stimulation for greater developmental functioning.

The third factor was identified as "Children's Developmental Problems," comprising the four MPI developmental problem symptoms. The subscales and their values were: Behaviour Problems (.84), Hyperactivity

(.70), Emotional Problems (.68), and Immaturity (.67). The identification of these closely associated variables in the everyday world of children as belonging together in this study suggests that the MPI, as a developmental screening and assessment instrument, could indeed provide information reflecting children's functional characteristics as seen by their parents. However, great caution must be exercised in interpreting correlational and factor analytic data in relation to external validity of the study. Children's parent-reported developmental characteristics and developmental problems obtained through interviews intended to confirm children's developmental functioning in relation to their particular environment as reflected in the MPI and the HOME results are analysed next.

Interviews with Parents

Results from detailed interviews with 20 parents have been referred to in earlier sections during the elaboration of performance variations on the different MPI and HOME subscales by children from the five nursery school centres. The most important aspects of children's functioning and their respective home environments have been highlighted. This section summarizes interview issues considered salient to the study in a tabular form. Five themes appeared to concentrate on five parental concerns about child-rearing in Tanzania, including helping children to become responsible individuals, children's activities in the family, parental understanding and concerns for their children's development and behaviour.

Table 5.30 summarizes the 20 parents' understanding of their children's developmental functioning and behaviour characteristics. Five and six year olds were expected to carry out, and were actually assigned, some responsibilities in the family. They were also expected to care for themselves and others to some degree. In terms of socially acceptable and unacceptable behaviour, they were also expected to know and apply them appropriately in different social contexts. The interviews revealed that parents understood the intellectual and functional levels of children within the family environment. They also understood different problems reflected in children's behaviour and everyday functioning (see Table 5.30).

The interviews with parents revealed that children lived and interacted with many other adults in the families. Older children were expected to care for younger ones and to guide them in learning various skills and socially acceptable behaviour. Parents expressed strong interest in promoting the development of good behaviour, reflected in respect for people and property, obedience, attentiveness, punctuality in attending to instructions, self-care and orderliness. Despite these noble expectations, the interviews revealed little parental

Table 5.30
Parental Understanding and Concerns for Children's Development and Behaviour

Children's Responsibilities in the Family

- run errands
- clean the house
- wash simple items (clothes, utensils)
- water, weed, manure and collect produce from gardens
- water poultry
- fetch things
- remove utensils from dining tables
- fetch water for washing hands or for drinking during meals
- report events (visitors, occurrences needing adults' attention)
- care for household items
- clean the compounds
- fetch seats for elders

Fine Motor Activities

- hold utensils accurately
- sewing playing cloth balls, cotton balls, sisal fibre balls
- making imitation toy cars
- cooking activities involving rice, porridge and stews
- drawing animals and people on sand, floors and walls
- moulding objects with wet mud soil: animals, instruments an buildings

Acceptable Behaviours
Emphasized by Parents

- respect for people: parents, brothers, sisters and elders, and young people in general
- maintenance of good social behaviour: greetings, thanks, apologies, sympathies
- obedience to adult instructions
- care for other children's property
- attention through careful looking and listening
- orderly behaviour: placing objects in proper places

Self-Care (Self-Help Activities)

- personal hygiene: cleaning mouth, face, dressing and combing hair with help
- organize personal clothing, play objects and educational materials: books, pictures, balls, drawing materials
- make own bed
- serve themselves at meals (a few children)

Intellectual Activities

- counting activities: counting fingers, bananas, oranges, pencils, spoons, eggs, chickens
- locating things by sizes: big, small, short, tall
- distribution of objects among people in the family
- identify things by colours and shapes

Language

- emphasis on correct and appropriate language use in different social contexts: greetings, requests, thanks, apologies and narration of events and personal experiences and story telling

Unacceptable Behaviour

- disobedience to instructions
- inattentive to people and things
- carelessness: breaking and spoiling things
- stealing and lying behavioer
- abusive language
- delay in attending to instructions
- complaining and grumbling
- quarelling and fighting with others
- laziness
- disrespect

Table 5.30 (cont'd)

Play and Educational Materials in the Home	Problems Observed in Children
– some books – some toys, dolls – radios and cassette players – tyres, balls, marbles – throwing toys – picture books and drawing materials – imitative games: cooking, construction activities – stringing objects – running, chasing and hide and seek – telling games: riddles and stories in turns	– eating problems – counting difficulties: mixing numbers, failing to count to 10 (expected to count own fingers) – comprehension problems related to operating parental instructions – language problems: mixing up words, repeating words – delayed speech acquisition – reluctance to talk during play with others, or in response to parental querry – problems associated with late morning rise, accompanied with moodiness, disorderliness, low appetite and inactivity – shyness and reluctance to do things, requested or on own initiative

direction and guidance of children's development and learning, except in terms of social behaviour in particular contexts. The developmental aspects related to the social domain were strongly emphasized. Problems observed in children's functioning were of great concern to the parents because such problems affected children's general comprehension and attendance to adults' instructions. Some aspects of parental and family provisions for helping children develop and function effectively are discussed in the next section.

Question 5: The Family Helping Young Children to Develop School-Related Capabilities

This section summarizes the overall results from the MPI and the HOME inventories, and the three cognitive subtests in light of the interviews. The ecological validity of the inventories' items is highlighted. The concerned subscales of the two inventories include: Conceptual Comprehension, Memory, Letter Recognition and Number Comprehension from the MPI. From the HOME, the subscales include Language Stimulation, Availability of Toys, Games and Reading Materials, Stimulation of Academic Behaviour and provision of a variety of stimulation to children. All these subscales were significantly inter-correlated with one another in children's performance on the vocabulary, memory and quantitative reasoning subtests.

Language Stimulation

Interviews with parents and principal child care providers revealed that children's language in the home was improved through deliberate adult corrections and direction. The adults demanded that children explain themselves especially when in trouble (i.e. when hurt, mistreated, uncomfortable or in need of services). Some parents answered and asked their children questions concerning different topics. Other parents told stories to children and, in turn, asked the children to narrate events of interest. The importance for children to understand verbal directions and follow instructions from adults was accurately emphasized in all families involved in the study. The interviews underscored the important role played by older children in the family in facilitating overall learning in language development and many other skills for younger children. An interesting observation was made by several parents, that is, their first-born children talked later than the second or third-born.

Stimulation of Quantitative Reasoning

The interviews with parents indicated that a majority of the five year olds (80%, except five out of fifty children) could count from one to ten. Four children (8%) could count from one to fifty and could also write numbers from 1 to 50. Parents observed that children's first experiences in counting started with instruction in counting fingers on their hands and then this process extended to toes on their feet as they grew older.

Counting was also developed through the counting of objects in the homestead. Utensils, marbles, sticks, bottle caps, stones and seeds provided some of the environmental variety in the development of quantitative reasoning. Whenever parents sent children to bring more than one object or utensil, they were asked to demonstrate by showing the number of fingers equal to the number of objects. In some cases, children were asked to share things such as fruit, sweets or biscuits and to verbally explain the activity and the outcome. Young children predominantly learned to count from older siblings who provided constant companionship in the absence of parents. The limited time that children spent with parents during the day also made the presence of older siblings critical in younger children's learning.

The interviews revealed that families lacked appropriate stimulation materials for young children in all aspects of academic stimulation (i.e. quantitative reasoning, drawing, reading and writing activities). Some materials, such as books and drawing materials, were available mainly in families where there were children already in school; in families where there were no children attending school, picture books and such materials were scanty. A few families indicated that they had cards for children, and construction games (using animal picture pieces) or that they engaged their children in quantitative reasoning for its own sake. Most quantitative reasoning activities in the families were context or problem bound, except in the nursery schools.

Stimulation of Reading and Writing Skills

The results of the MPI indicated that reading and writing skills, on the average, scored the least by both five and six year olds when compared to the other six developmental skills. The five year olds scored very low on this subscale. The six year olds scored relatively higher due to the emphasis on teaching the literacy skills in the nursery school. The interviews indicated very little direction from parents at home. Most parents (60%) indicated strong interest in their children's mastery of the language skills, reading, writing and counting. The parents indicated that they spent about half an hour each evening talking with their children mainly about the work they had done at the nursery school. Although story telling, riddles and puzzles were mentioned often, none of the parents indicated reading to their children or asking children to read for them. By inference, it appears that the parent-child interaction was heavily parent-dominated, which conforms to the cultural norms of children having to learn more from adults. It was also evident that reading and writing stimulation materials for young children were lacking in the families, except for a few picture books and occasional drawing materials.

What has been articulated above in relation to reading and writing materials applies also to play materials. The majority of families generally gave little priority to the development of play materials for children. A few parents indicated that their families had toys for children, including toy cars, trucks, marbles, bicycles, planes, tires and various kinds of balls. Children of both sexes were observed to improvise with available environmental materials, that is, tin cans were often used as pots for imitation of cooking activities, coconut husks, bottles, pieces of clothing and sticks were often used for very imaginative functions.

From the interviews, parents identified some problem behaviours and the times of their occurrence. For example, one child in a family of four children developed a high fever at three years of age. His speech and communication development slowed down later on. Parents find that it is difficult for him to obey instructions, he has difficulty in learning, and is quarrelsome and often fights with others. The parents, nevertheless, do not associate these behaviours with the traumatic illness in early childhood. On a number of other occasions, parents described their children as being bossy or possessing leadership characteristics when playing in a peer group.

CHAPTER VI

DISCUSSION, IMPLICATIONS AND CONCLUSIONS

Introduction

Two principal goals have guided this study from its inception. The first goal was to understand the developmental and functional characteristics of preschool children in Tanzania and the characteristics of their family environment. The second goal was to explore the appropriateness of the MPI and the HOME inventories, instruments used in the study, for the twin task of describing the child and his/her family environment in the Tanzanian culture.

To accomplish the two goals, five research questions were formulated to guide the study. The five questions have now been converted into equivalent headings to guide the discussion of the findings. The discussion has thus been organized into: (a) Children's Developmental and Functional Characteristics; (b) Family Characteristics Supporting Child Development; (c) Special Needs/Developmental Delays; (d) Ecological Validity Issues; (e) Home/School Influences; (f) Research Implications; (g) Clinical Implications; and (h) Summary and Conclusions.

Children's Developmental Characteristics and Functioning

Question 1 of the present study sought to explore the developmental and functional characteristics observed in five and six year old children as identified through the seven developmental and four problem symptom subscales of the MPI. Among the principal findings of the study was the qualitatively and quantitatively higher level of developmental functioning and self-management skills among the six year olds. The results for the seven developmental skills indicated that the differences between the overall means of the five year olds compared to the overall means of the six year olds were statistically significant (Wilk's Lambda Value 0.31, F 13.99, p < .000).

The differences in performance on all the MPI subscales from Self Help to Emotional Problems were also statistically significant for age (F-ratio above 5.45 (1,80) p < .02), except in the Behaviour Problem subscale (F-ratio 0.02 (1,80) p < .89). That is, the performance of six year olds in Self Help skills, Fine Motor skills, Expressive Language skills, Memory Functioning, Letter Recognition and Number Comprehension was superior to that of the five year olds. On the developmental problem subscales, the six year olds were identified with fewer characteristics of Immaturity, Hyperactivity, Behaviour Problems and Emotional Problems than the five year olds.

These results conform to the research findings indicating, that age is a significant factor in determining children's developmental functioning (Brigance, 1978; Scarr & Wienberg, 1986). Qualitative and quantitative differences in children's development and functioning have also been observed in other studies in Africa (Blair, 1981; Curan, 1984). In assessing the abilities of Basotho preschool children in a Basotho environment, Blair found that the five year old children had acquired a lot more knowledge of the environment and social patterns than the three year olds.

Blair's (1981) assessment of cognitive abilities in young children aged three, four and five years old, as reflected in language, perception, memory and general environmental concepts, did not produce statistically significant differences except in children's mediational abilities. It was, however, found that development of physical abilities was statistically significant in children's progression from three to five years old. Statistically significant also were the developmental differences in the personal social abilities. The lack of significant differences in language and cognitive abilities was surprising but could probably be attributed to the ungraded tests used in the study. Although statistically significant, children's performance on the items associated with school skills, such as number skills, letter recognition and reading, in the Tanzania study were lower compared to the aspects related to general social skills and day-to-day functioning.

Curan's (1984) study of Nigerian children's activities in the family revealed that from the age of five years onwards, children were encouraged to learn social values such as respect, obedience, attentiveness and they were expected to remember adult instructions. The results of the Tanzanian study indicated that parents trained children on values similar to the Nigerians at an early age. Children's failure to master and apply the behaviours in appropriate social contexts is punished. It may not be surprising, therefore, to find that social development receives precedence over cognitive development prior to school age.

Another interesting finding from the Tanzania study involved the differences in the performance of children from Centres A, B and C. The three centres had statistically significant higher performance on the MPI ($p < .05$) than Centres D and E. It has already been speculated earlier that the differences in performance may reflect the differences in children's family environments. Previous studies elsewhere (Bloom, 1964; Caldwell & Bradley, 1979; Lazar & Darlington, 1982) have indicated that a stimulating family environment facilitates children's acquisition of both developmental and functional skills. Cox (1987), in studying the relationship between the family environment and children's development and learning, found that parental attitudes and guidance toward children was a very important factor. From the interview results, it was evident from parents in the Tanzania study that families from Centres A, B and C locations were more supportive of their children's developmental and learning activities. These parents expressed high educational expectations for their children. They also reported monitoring of their children's activities more often than parents from Centres D and E locations.

Studies on child development have also revealed that the quantitative and qualitative differences observed in the functioning of children of different ages result from a multiple of interacting factors in the child's environment, especially the family (Bronfenbrenner, 1979; Caldwell & Bradley, 1979). What children learn, when they learn required skills and behaviours in self-help, fine motor, language and communication depends on the opportunities parents create in the family. Western children are generally encouraged to be self-reliant early in life (Brigance, 1978; Cole & Cole, 1989). The current study revealed that five and six year old children in Dar-es-Salaam were still highly dependent on their parents or care-taker adults for assistance with many of the self-help skills. Differences existed between parents on what they thought about children caring for themselves.

Parents from Centres A, B and C locations tended to encourage children to do things for themselves, but they often reported interrupting children's activities frequently. Children were accused of being too slow to dress or fetch something and doing things the wrong way. The majority of parents agreed that because they were impatient with children's mishandling of instructions, they helped the children. Other parents felt that children were still too young to do things for themselves, thus an adult had to attend to them. Creation of opportunities and freedom for children to develop skills at the appropriate time is extremely important (Anselmo, 1986); however, such opportunities and freedoms were limited in the Tanzanian culture and specifically in the families involved in the present study.

The type of parent-child interactions reported through parental interviews indicated that children's expressive language activities, communication skills, memory skills and quantitative reasoning were not stimulated beyond the concrete social context. The stories that children told one another were reported to be more directed at entertainment than intellectual stimulation. Although parent-child interaction is recognized as being the most important influence on children's social and cognitive development during the preschool years (Cox, 1987; Ugwuebu & Siann, 1988), parents were hard-pressed with time. Combined with restrictive cultural attitudes, children's development of questioning attitudes, curiosity and investigation, normally developed at home, remains underdeveloped (Durojaiye, 1976). Despite the many drawbacks limiting children's intellectual stimulation among the different families, there are some provisions which support child development and learning in general.

Family Provisions Supporting Child Development

Previous discussions have already highlighted various ways in which parents/adults stimulate and encourage children to acquire and master necessary functional skills in their environment. However, the contribution of various aspects of the general family environment to optimal child development and prevention of handicapping conditions also needs to be emphasized. The environment provides the child with both human and material stimulation to activate and exercise different sensory modalities (Anselmo, 1986).

The availability of play materials, toys, reading materials, and writing and drawing implements helps children to exercise their intellectual potential, fine motor skills and self-help skills (Almy & Genishi, 1978). In the Tanzania study, parents reported that their homes had limited play materials for their children and that although books were available in many homes, they were inappropriate for younger children. Mahenge (1979) reported that games for stimulating number development, language development and social skills were all lacking in day care centres studied in Tanzania. However, the environment in general had plenty of materials which, with a little adult initiative, could be converted into inexpensive, appropriate play materials.

It was encouraging to learn that older children in Tanzania created their own play materials by moulding clay, inventing drawing objects, making balls out of discarded clothes, cotton thread or sisal materials, and creating a use for sticks, cobs, coconut husks and various types of seeds. Through these play activities, children learned body control, muscle coordination and cooperation and language facility (UNICEF, 1979).

Language facility could especially be enriched if parents made deliberate efforts to help children learn names of animals, plants, insects in the environment and from available pictures. At the same time, as children engage in riddles, parents could include various characteristics of animals, insects, birds and plants from the environment. Language stimulation could also be increased by providing children with elaborate explanations for acceptable and unacceptable behaviour. Through sharing stories and descriptions of events with children, adults could extend children's cognitive development and general understanding of the environment and the interrelationships of its components (Anselmo, 1986; Ugwuebu & Siann, 1988).

The interview with parents revealed that children were not free to express what they saw, heard or experience. In most cases, parents expressed their major problem as being time to listen to children. The majority of working parents reported spending about half an hour with children after evening meals to find out what they had done at the nursery school, and occasionally to listen to stories. Parents observed that their children have opportunities to learn from other people and to listen to several radio programs aimed at children, for example, "Children's Story Time," "Greetings to Children" and "Radio Play." Such opportunities need to be increased and more adult guidance provided (Omari, 1982).

Stimulation of academic behaviour in the family was sporadic and general entrusted to older siblings which is similar to the findings of Héron & Otaala (1982) and Omari (1982). This responsibility has been developed as a social obligation through constant cooperation from children to spend more time together than with adults. This does not imply that adults have nothing to do with younger children's learning activities; to the contrary, some parents indicated that fathers especially spent evening time tutoring their children. As observed earlier, children were encouraged to communicate clearly and follow adult instructions accurately. They were also trained to discriminate between various animals and insects, especially harmful ones, in the environment. Families indicated that they have regular meal times together, as well as prayers and, occasionally, they narrate events to one another, thus training children in careful listening and to taking turns. Other researchers have found narration of events to be important in promoting children's memory development (Curan, 1984; Istomina, 1977; Siegel, 1986).

As expressed earlier, the Tanzanian home provided children with opportunities to learn about relations of things in space as they carried out adults' instructions, for example, putting objects on or under the table, beds, or other objects, activities also observed in other studies (Saxe, Guberman & Gearhart, 1987). Children were often expected to distinguish small objects from big ones, large from small ones or putting things in a series. Reading and writing skills were not emphasized in the home environment, consequently most children were minimally prepared for school in this skill. Studies elsewhere have shown that children with readiness for school learning are better motivated to learn and perform better than other children (King & Myers, 1983; Lazar & Darlington, 1982).

Overall, considering the social and environmental demands of children's development and functioning in Dar-es-Salaam, the environment has potentials for optimal child development and functioning. What seems to be lacking is the adults' awareness of these potentials, coupled with deliberate initiative to promote children's development and learning. Adult education and public education programs should educate parents and child caretakers to interact with children in more educative ways to stimulate children's optimal social, intellectual, linguistic and communicative potentials. Children's thinking and problem solving skills in the family should be advanced beyond the concrete demands of the child-adult interactions. Children should thus be encouraged to engage in more self-directed and self-management activities to encourage the development of self-confidence.

Special Needs and Developmental Delays

The purpose of screening and assessing children's developmental progress and functioning was to identify the presence of problematic or handicapping conditions likely to impair children's everyday functioning and later school learning. Four children from the study were suspected of manifesting serious problems in general developmental functioning. The first, a six year old child, appeared to be immature, had difficulties with quantitative reasoning, and had difficulty in handling other children in socially acceptable ways.

Previous research (Guralnick & Bricker, 1987) has characterized children with developmental delays as experiencing problems in their interactions with adults, initiating plays with peers, taking turns in play and discussions with others. Developmentally delayed children have also been observed to suffer from inability to implement adults' instructions accurately (Krakow & Kopp, 1983).

The particular child mentioned above was reported by the parent as being unable to count systematically from one to ten. This six year old mixed up numbers when counting, even when provided an example to follow in the nursery school. When asked to copy numbers from the blackboard, this child just scribbled irregular lines in the notebook. This child's drawing ability was very immature. The teachers in the nursery school regarded this child as a slow learner, but the symptoms portended more serious problems than just slow learning.

Cross-cultural research on children's development and learning (Werner, 1979; Whiting and Edwards, 1988) has established that six year olds from different cultures were expected to count more than ten objects accurately, interact with others effectively, understand the social norms of acceptable behaviour, and be able to participate in family responsibilities successfully. The Ontario Ministry of Education (1978) reported that children who were identified with developmental delays in number comprehension, language comprehension and behaviour problems tended to experience serious difficulties in school learning. A study by Kisanji (1979) on children with handicaps in regular schools in Tanzania indicated that most of the children could have been identified in the family prior to school enrolment and appropriate preventive measures could have been taken in the family.

The second child manifesting serious problems was identified as having behaviour problems. This child generally woke up late in the mornings, was reluctant to perform essential self-help tasks, and was moody, inattentive and disorganized. Parental attempts to assist the child to become more responsible only resulted in the child crying, becoming disobedient and quarrelling with brothers and sisters. The parent indicated that this child had been punished severely, however the behaviour did not improve. The child was unwilling to carry out tasks which he disliked or that were unfamiliar to him. For these reasons, the parents considered the child to be the most difficult of their four children.

Research studies (Winzer & Rogow, 1987) have reported serious difficulties experienced by parents in handling children considered to be physically and mentally normal but who are actually handicapped in their developmental functioning. Studies have also shown how children with mild cognitive, emotional and behavioural problems remain unrecognized by adults as children with special needs. Such children tend to be regarded as difficult individuals to be handled with strict discipline. Helping parents and teachers, through radio education and adult education programs, to learn about such children would contribute greatly to the development of children's potentials. The Mother Child Health Clinics spread throughout the country could provide a very important avenue for public education on early childhood stimulation and intervention.

The third and fourth children were identified as having problems of immaturity. The children consistently refused to attempt tasks without an adult's support. Adult criticism and correction of children's work, especially correction of inappropriate behaviour, completely immobilized these two children. These children were reluctant to engage in peer play and seldom talked with other children. The two children often preferred to stand or sit alone in the nursery school compounds. Reports by parents suggested that the children had problems of self-expression; one of the children tended to misconstrue tenses and often became angry in the process of expressing personal feelings.

A number of other children in the study were identified as having isolated problems or difficulties associated with performance of specific tasks involving self-help, fine motor, language, number comprehension and letter recognition; however, these difficulties were considered temporary in the anticipation that they would disappear with maturation. Parents observed that children often forgot what they had been told or requested to perform, but that these behaviours were associated with youthfulness and playfulness of children. The parents of the four children suspected of serious developmental delays, however, were very concerned about their children's improvement. Punishment and gentle guidance had not been successful in improving the children's development of acceptable social behaviour nor enabling them to function at expected levels. Although the parents were advised to consult experts in regard to their children's handicaps, a thorough investigation into the nature of the children's problems through tracing personal histories would be necessary before concrete suggestions could be made for rehabilitation. At the same time, progress for similar children already in school should be monitored regularly so as to ensure their benefitting from school instruction. Parent with children exhibiting development delays or behaviour problems would also be greatly helped if a system of public education through radio, television and the mother-child health clinics included programs related to developmental screening and assessment, combined with parent education programs in the existing mother-child regular check-up programs.

Home/School Influences

The relationship between home and school was important to the present study since one of the purposes for developmental screening and assessment in Tanzania was to identify children with potential learning problems likely to affect their learning progress in school. Evidence from child development research (Anselmo, 1986) has indicated that by the age of seven, children have already acquired enduring physical, social, emotional, intellectual and linguistic abilities. By the age of seven, children have also acquired substantial knowledge and skills related to various environmental contexts in the different developmental domains (Cole & Cole, 1989; Scarr & Wienberg, 1986). Research on early childhood development has also shown that by the age of seven, children with developmental problems experience greater difficulties and prevention for later handicapping conditions is jeopardized. Therefore, the importance of the quality of children's early home environment in school learning and later success in life cannot be underestimated; nor can the importance of early home stimulation for the enhancement of children's optimal development and prevention of handicapping conditions be underrated.

The importance of early childhood stimulation and the need to integrate children's early home experiences with those of the school in Tanzania is further supported by Durojaiye's (1976) and Omari's (1982) findings that adult-child interactions in African families have shown that young children are capable of learning much more than adults previously realized. Bloom's (1964) review of literature on intelligence and school achievement suggested that approximately 50 percent of the variance connected with intelligence is observed at the age of four years and that 80 percent of the child's intelligence was acquired by the age of eight years. This evidence would strongly favour deliberate direction and guidance of children's early preschool development and learning in any cultural context.

Successful early childhood education programs involving parent participation have produced increases in children's IQ scores, social and emotional adjustments in school learning, less drop-out rates, more positive outlook to life, self-confidence, and higher educational aspirations. Lazar and Darlington (1982) investigated the short- and long-term effects of early childhood education by analyzing a consortium of studies involving control and experimental groups from impoverished groups of American society. Results showed that the experimental groups improved in IQ, indicated greater interest in learning, performed better in school, were more socially adjusted to the school environment, and had developed long-term ambitions.

Comparative studies by Baruth and Duff (1980) showed that children with early childhood education and stimulating home experiences had greater interest in learning letters of the alphabet, words and numbers, and enjoyed being read to and interacting with books and other printed materials. These children scored higher in reading skills at the end of standard one. They learned things more quickly, showed greater auditory discrimination skills and had superior motor coordination. These children were socially better adjusted to the school environment during the first three years. They reflected better attitudes, health habits, play behaviour and game participation during the first school year. In general, these children performed better in reading, social science, music, language and arithmetic. At the family level, their parents had closer association with the school.

The long-term effects of the home environment on children's academic and intellectual gains in preschool are still being debated because improvements have not persisted throughout the school career. Some studies have observed that IQ gains level off after the second or third year.

However, the social gains seem to persist throughout to adulthood (Lazar & Darlington, 1982). Evidence from child development studies suggests that the influence of early childhood education extends beyond intellectual development into domains of social, emotional and physical aspects, due to the rapid acquisition of skills and structures in early childhood. Lazar and Darlington (1982) further pointed out that children exposed to preschool education developed other non-intellectual characteristics such as lower levels of inhibition, more spontaneity, and independence in their activities, more positive attitudes toward school and school learning. Children with positive home experiences develop a strong sense of self-confidence, as well as confidence in adults, and they can work alone with very little supervision, thus having a greater sense of initiative, self-reliance, curiosity and maturity (Anselmo, 1986; Cross & Riach, 1986).

Improvement in parent-child interactions, and provision of social, intellectual and academic stimulation at home during the early childhood years in Tanzania could greatly minimize the number of children with learning difficulties, as well as minimizing the number of failures. Children's performance in various school subjects could also be improved. Children would be assisted in developing a greater sense of self-confidence, initiative and self-management skills. Children with handicapping conditions would receive the necessary attention to alleviate exacerbation of the problem.

Ecological Validity Issues

Research instruments are valid to the extent that they measure or assess what they purport to do. Adoption of child development instruments from one culture to another has been identified with several problems.(Baine, 1988; Serpell, 1984). Adoption of the MPI and the HOME for the Tanzania study was no exception. Continuous efforts were undertaken in the process of the research to establish the ecological validity of the items from the two inventories. From the translated versions of the MPI and the HOME, face validity of the items was obtained through checking ~~up on~~ experienced nursery school teachers. However, the interview data from parents provided the most important information on the ecological validity of the items.

Cultural differences were reflected in a number of items on the inventories, for example, the indirect social modelling process used by parents and adults to shape children's behaviour and the indirect expression of praise for success and self-identification. A person's success was evaluated in terms of the group/family; praising a child for good work or behaviour could spoil the child (Durojaiye, 1976). Another cultural difference was the adults' expectations of children to learn through attentive listening, looking and observation, rather than questioning and challenging what adults said or did (Mbise, 1986).

Specifically, the ecological validity of items in the Pride, Affection and Warmth subscale and Modelling for Social Maturity subscale were considered culturally inappropriate. Parents reported that they rarely talked about children's individuality, nor did they praise them openly in the presence of other people. Identification of oneself and the feeling of "me" reflected negatively on the individual's association with the group. Affection and warmth of individuals in the family was not, therefore, developed in terms of children's possessiveness of the mother or father but through realization that they belonged to a caring group and therefore needed one another.

Modelling and encouragement of social maturity in the society is accomplished through implicit training. Inappropriate sex behaviour was normally modified through reference to similar illustrative examples with the subsequent negative outcomes on the individual. Shaping rather than direct modelling becomes the technique for behaviour and personality modification in the family.

Although teachers had identified most of the MPI items as being ecologically appropriate for the children in the study, drawing from parent interviews and the actual performances of children on the various subscales, it appears that the Letter Recognition items were ecologically inappropriate for children prior to school entry. The majority of families did not emphasize the acquisition of literacy skills in preschool children, at least not practically. Similarly, the fine motor skills associated with cutting things, handling delicate instruments, or activities related to shaping things into different sizes, shapes and appearances were not deliberately cultivated in children until they reached school age.

Another category of items that appeared to be ecologically inappropriate was the problem symptoms for Immaturity, Hyperactivity and Behaviour Problems. The specific characteristics presented require insight into the cultural norms of behaviour classification for accurate interpretation. Thus, except for the serious problem symptom cases, the majority of children identified by parents as reflecting immature or hyperactive behaviour may not imply impaired functioning in children. The four serious cases mentioned earlier, however, do merit serious attention as their normal functioning and relations seemed to be impaired.

Overall, the items on the seven developmental subscales of the MPI seemed to be ecologically valid for the sample under study, except the Letter Recognition scale for younger preschool children. Most of the tasks presented in the subscales described what children would normally do in their everyday activities in the family.

From the HOME, evidence from parent interviews and inter-correlation of some of the subscales suggests that some of the items were ecologically valid. Some of these items were found in the subscales with items in Variety of Stimulation, Language Stimulation, Physical Environment Stimulation, Toys, Games and Availability of Reading Materials, and Stimulation of Academic Behaviour. Further studies with these inventories will be necessary to establish both ecological and construct validity for the items.

Clinical and Research Implications

Clinical Implications

Although early detection and intervention are presumed essential for successful habilitation and rehabilitation of young children in Tanzania, their care mainly rests with families and medical authorities. Early detection of handicapping conditions is normally carried out in an uncoordinated way. As observed in the study results, parents may observe some abnormal developments in their children and may consult medical authorities; however, in most cases, they do not obtain information to help them beyond the hospital premises. The assessments made by experts tend to be concealed from the parents.

The consequences can be observed in the delayed training of these children until they reach school age. From this study, it has been inferred that parental knowledge of normal and abnormal child development would help alleviate such delays. Use of research instruments such as the MPI, which involves the parents in observing their children, stimulates increased awareness of parents in children's functioning. Clinically, therefore, the results obtained from parents and child care providers can be used for planning parent training programs.

With the current increase of screening and assessment centres in Tanzania, referrals and early interventions are likely to increase through early identification services. Parents' involvement in the screening process can not be overlooked because parents are the only channel through which children can be reached in the early formative years (0-6 years). Training of public health workers in constant contact with parents in the identification of children's developmental progress in different domains becomes a central concern due to scarcity of qualified experts in various fields of children's issues. Training of day-care assistants and nursery school teachers to complement parents' and doctors' efforts ensures access of screening, assessment and early intervention services to the majority of children.

In summary, there is a need for experts with knowledge of early childhood development, education and problems to work closely with the parents. The Mother-Child health clinic's staff, especially, found in all parts of the country, and the adult educators can be very instrumental in raising parents' educational level in the area of children's needs and problems. To enhance services for normal and handicapped children as stipulated in the government and party policies, there must be systematic children's screening and assessment, parent guidance, counselling, teacher training in early childhood education, and production of appropriate children's material to support parents' efforts at home and teachers' efforts in school.

Research Implications

Developmental screening and assessment has just begun in Tanzania. The need to create a strong base for children's services has been expressed in several government and ruling party pronouncements (CCM, 1987; Ministry of Education, 1980; UNICEF, 1979). The establishment of the five zonal child assessment centres in 1987 is one step toward catering for the majority and minority of children in the society.

The development of appropriate screening and assessment instruments to identify different handicapping conditions accurately should, therefore, become the foremost priority for research. The second priority should be to ensure that the screening instruments developed lead to the creation of information which will increase parents' and teachers' understanding of children's strengths and weaknesses. Different domains of child development must be munificently described so as to enhance detection of abnormal development and behaviour.

From this study, therefore, further research needs to be conducted with the two inventories combined with indepth interviews to: (a) establish the cultural psychological foundations underlying child-rearing practices; (b) create norms of child development characteristics based on Tanzanian children; and (c) evolve approprite early childhood stimulation/intervention training programs for parents, teachers and early child care-takers. To promote services for handicapped children already in school, screening and assessment should be extended to school with the intention of creating supportive services for children with learning difficulties. Both preschool and school children can only be served efficiently and effectively if their incidence in the country and the nature of their handicaps is understood.

Summary

The discussion in this chapter has highlighted young children's developmental characteristics and functioning in the Tanzanian family environment. Characteristics of the family environment supporting development have also bee presented, and suggestions for improvement have been made. Potential problem conditions observed in children and the implications to later child development and learning have been addressed.

The discussion has indicated that results from the study reveal normal functioning in the five and six year olds in the family as observed in Conceptual Comprehension Skills, Fine Motor Skills, Memory Skills, Language Comprehension Skills and Number Comprehension Skills. The interviews with parents revealed that the family environment provided different kinds of stimulation as demanded by situational contexts. The interviews also indicated that parents understood their children's functional levels and developmental problems reflected in day-to-day activities of children and their interactions with adults.

Areas for parental improvement to enhance children's development and learning have been identified as a need for increased parent-child communication on different subjects, parents' involvement in promoting children's play materials in the family, and allowing children more freedom to do things on their own. Provision of academic stimulation and systematic guidance of children's learning activities has also been suggested in terms of books, drawing materials, pictorial materials and manipulative activities involving parents and children. The discussion further emphasized the importance of early childhood education and stimulation in enhancing children's early school learning, as well as preventing the advancement of handicapping conditions.

Finally, the discussion has presented aspects of the MPI and the HOME inventories which appear to be ecologically valid and therefore appropriate for screening and assessing children in Tanzania. Cultural problems likely to affect interpretations of observed behaviour described in the inventories have been raised. The importance of the researcher's inside knowledge of cultural behaviour based both on indepth understanding of the culture and broad research information has been suggested as one method of overcoming misinterpretations of children's development characteristics and problem behaviour in subsequent studies.

Several clinical and research implications have been identified and emphasized: (a) the importance of parent and early child care-takers' training and involvement in early childhood screening, assessment and program preparation; (b) the need to educate parents on early childhood stimulation and intervention through available public education programs to raise their awareness of children's needs and problems, and how to make subsequent provisions; (c) the need for parents and adults in general to modify and improve the quality of social, intellectual, linguistic and communicative interaction with children; and (d) the importance of early special attention and intervention for children identified with handicapping conditions.

Cooperation between child experts, parents/teachers and early child care-takers has been stressed, especially the creation of communication channels among them, preparation of joint educational programs and materials to further services for children. The contribution of early child development research involving parents and child experts can facilitate the development of appropriate stimulating programs and materials. The importance of increasing parents', child care-takers' and teachers' knowledge of normal and handicapped child development characteristics has been underlined. Success for early childhood stimulation and intervention programs and subsequent prevention of handicapping conditions and school failure in Tanzania is dependent on informed parents', teachers' and experts' cooperation in the creation of appropriate knowledge and techniques on child development characteristics and learning.

Conclusion

Developmental screening and assessment of young preschool and school children in Tanzania have been considered in the context of promoting services for all children. The major focus has been directed toward the essence of creating a knowledge and informational base for child-care providers. It is therefore imperative to emphasize the role of parents' and teachers' contribution toward the promotion of early childhood development and prevention of handicapping conditions.

Discussion has focused on an exploration of children's early home environments and how children interact with other people and material objects to enhance or inhibit their optimal development and learning. The importance of providing children with both material and human stimulation has been identified as the principal means by which young children's overall development is stimulated and maintained. Through early identification of children in potential handicapping conditions, families can prepare and provide early intervention, thus enabling the child to reach optimal levels of development. To enhance early intervention, parents and other child care providers knowledgeable in childhood developmental characteristics and problems play a major role.

Knowledge should include both knowing the child and knowing what services are available to assist child care providers. In this case, public education on parenting and child characterisics becomes necessary, especially through adult education classes. Parenting lessons should also be built into the school curriculum from the primary to the university level. This study has emphasized the importance of linking children's activities in the home and the school on the understanding that the influence of the home on children's success at school is highly important. Deliberate efforts should therefore be made in families to stimulate children's academic skills to prepare them for school learning. The principles emphasized in Education for Self Reliance should begin in the home where children acquire substantial knowledge prior to school enrolment.

The perspective of this study has been that children's actual behaviour and problems are a function of a continuous process of multi-directional interaction of feedback between the individual child and the situations which he/she encounters in the home environment. The child participates actively in interacting with the socio-cultural environment which can provide or deprive him/her the opportunities for development. In conclusion, therefore, the child's problems and strengths cannot be understood in isolation from the characteristics of the home environment. Thus the environmental influence on the child's current functioning and development should be studied in terms of both the immediate and the larger environment, that is, the physical, social and cultural properties operating both directly and indirectly on children.

BIBLIOGRAPHY

Agnew, N. & Pike, S.W. (1987). The science game: An introduction to research in the social sciences, 4th ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Alexander, K.L. & Entwistle, D.R. (1988). Achievement in the first two years of school: Patterns and processes. Monographs of the Society for Research in Child Development, 53(2): Serial No. 218.

Almy, M. & Genishi, C. (1979). Ways of studying children, revised edition. New York: Teachers' College Press.

Alpern, G., Boll, T. & Shearer, M. (1980). Developmental profile II. Colorado: Aspen Psychological Development Publications.

American Association on Mental Deficiency (1977). AAMD Adaptive behaviour rating scale - public school version. Washington, D.C.: Author.

American Association on Mental Deficiency (1983). AAMD Adaptive behaviour rating scale - public school version. Washington, D.C.: Author.

American Educational Research Association, American Psychological Association (APA), National Council on Measurement in Education (1985). Standards for educational and psychological testing.

Anselmo, S. (1987). Early childhood development. Columbus/Toronto: Merrill Publishing Company,

Bagnato, Stephen & Neisworth, John T. (1981). Linking developmental assessment and curricular (prescriptions for early intervention). Aspen Systems Corporation, Aspen Publication.

Baine, D. (1986). Testing and teaching handicapped children and youth in developing countries. Paris: UNESCO.

__________ (1988). Handicapped children in developing countries: Assessment, curriculum and instruction. Edmonton: University of Alberta Press.

Baraza la Kiswahili Tanzania (BAKITA) (1976, 1978, 1980, 1985). Tafsiri sanifu, Toleo la 2, 3, 4.5. Dar-es-Salaam, Tanzania.

Barnett, C.S. (1982). Teaching kids math. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Baruth, L.G. & Duff, E. (1980). Early childhood education. Boston, MA: Special Learning Corporation.

Bates, E. (1976). Language and context. New York: Academic Press.

Blair, Arthur (1981). Assessing the abilities of nursery school age children in Lesotho. Maseru, Lesotho: Department of Educational Foundations, National University of Lesotho.

Bloom, B. (1964). Stability and change in human characteristics. New York: Wiley.

__________ (1976). Human characteristics and school learning. New York: McGraw-Hill.

Borg, W.R. & Gall, M.D. (1983). Educational research: An introduction. New York: Longman.

Bradley, R. & Caldwell, B. (1981). The Home inventory: A validation of the preschool scale for black children. Child Development, 52: 708-710.

Bradley, R. (1982). The Home inventory: A review of the first fifteen years. In N. Anastasiow, W. Frankenburg and A. Fandal (eds.), Identifying the developmentally delayed child. Baltimore: University Park Press.

Bralic, S. (1983). Pilot programme of early stimulation: Follow-up of children a six years of age. In K. King & R. Myers, Preventing school failure. Ottawa: IDRC.

Brigance, A. (1978). Inventory of early development (birth to seven years). Curriculum Associates.

Bronfenbrenner, U. (1979). Ecology of human development. Cambridge, MA: Harvard University Press.

__________ (1986). Ecology of the family as a context for human development: Research perspectives. Developmental Psychology, 22(6): 723-742.

Bronfenbrenner, U. & Crouter, A.C. (1982). Work and family through time and space. In S.B. Kamerman & C.D. Hayes (eds.), Families that work: Children in a changing world. Washington, D.C.: National Academy Press.

Bwatwa, J.M. (1979). Adult education and the child. In Early childhood development and education, pp. 101-112. Dar-es-Salaam: UNICEF Office.

Caldwell, B.M. & Bradley, R.H. (1979). Home observation for measurement of the environment (HOME). Little Rock, Arkansas: University of Arkansas at Little Rock.

Caldwell, B. & Bradley, R. (1984). Home observation for measurement of the environment. Little Rock, Arkansas: University of Arkansas at Little Rock.

Campbell, D.T. & Stanley, J.C. (1966). Experimental and quasi-experimental designs for research. Chicago: Rand McNally College Publishing Company.

Canadian Association for the Mentally Retarded (1978). Children with special needs in daycare: A guide to integration. Canadian National Institute on Mental Retardation.

Chama cha Mapinduzi (1987). Sera ya Malezi ya Watoto na Vijana Tanzania. Dodoma: Government Printer.

Clarke, A.M. & Clarke, A.D. (1977). Early experience: Myth and evidence. York: Free Press.

Cole, M. & Cole, S. (1989). The development of children. Scientific American Books: W.H. Freeman and Company.

Copeland, R.W. (1984). How children learn mathematics: Teaching implications of Piaget's research. New York: Macmillan.

Cox, T. (1987). Effects of early cultural and material disadvantage in the home upon children's school progress. Early Child Development and Care, 27: 219-237.

Cross, T. & Riach, L. (eds.)(1979). Aspects of child development. Melbourne: AE Press.

Curran, H. Valerie (ed.) (1984). Nigerian children: Perspectives. London: Routledge & Kegan Paul.

Durojaiye, M.O.A. (1976). A new introduction to educational psychology. Evans Brothers Limited.

Dyer, J.R. (1979). Understanding and evaluating educational research. Reading, Mass.: Addison-Wesley Publishing Company.

Flavell, J.H. (1985). Cognitive development. 2nd ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Fobih, D.K. (1983). A model for a preschool programme and its relevance to the education of the disbaled in Ghana, pp. 53-64. In K. Marfo, S. Walker and B. Charles (eds.). Education and rehabilitation of disabled in Africa. Edmonton, Alberta: Centre for International Education and Development, University of Alberta.

Freire, P. (1972). Pedagogy of the oppressed. Sao Tome: Sheed and Ward.

Fryers, T. (1985). Screening for developmental disabilities, pp. 27-40. In K. Marfo, S. Walker and B. Charles (eds). Childhood disability in developing countries. Praeger Special Studies.

Gottfried, A.W. (1984). Home environment and early cognitive development. Orlando, FL: Academic Press.

Gottfried, A. & Gottfried, A. (1984). Home environment and cognitive development in young children of middle social economic status families, pp. 57-116. In A. Gottfried (ed.), Home environment and early cognitive development. Orlando, FL: Academic Press.

Gottlieb, G. (1983). The psychological approach to developmental issues. In P.H. Mussen (ed.), Handbook of child psychology. Vol. II. New York: Wiley.

Government of the United Republic of Tanzania (URT), UNICEF (1985). Analysis of the situation of chilren and women, Vols. I & II. Dar-es-Salaam: Tanzania.

Grossman, H.J. (ed.)(1983). Classification of mental retardation (revised edition). Washington, D.C.: American Association on Mental Deficiency.

Guralnick, M.J. (1986). The peer relations of young handicapped and non-handicapped children, pp. 93-140. In P.S. Strain, M.J. Guralnick and H.M. Walker (eds.), Children's social behaviour: Development, assessment and modification. New York: Academic Press.

Guralnick, M.J. & Bricker, D. (1987). The effectiveness of early intervention for at-risk and handicapped children. New York: Academic Press, Inc.

Gustav, J. & Lewis, I.M. (1988). Acquiring culture: Cross-cultural studies in child development. New York: Croom Helm.

Harkness, S. & Super, O.M. (1977). Why African children are so hard to test. In L.L. Adler (ed.), Issues in crosscultural research. Annals of New York Academic of Science (1977), 285: 326-331.

Héron, A. & Otaala, B. (1982). WHO/UNICEF workshop on alternative approaches to day care in Africa (report). Nairobi, Kenya.

Hintzen, H. & Hundsdörfer, V.H. (eds.)(1983). Education for liberation and development: The Tanzanian experience. Oxford University Press.

Howard, D.P. & De Salazar, M.N. (1984). Language and cultural differences in the administration of the Denver Developmental Screening Test. Child Development Journal, 14(1).

Hulin, C.L. (1987). A psychometric theory of evaluations of item and scale translations: Fidelity across languages. Journal of Crosscultural Psychology (June), 18(2): 115-142.

Institute of Education (1984). Development of special education in Tanzania. Dar-es-Salaam, Tanzania.

__________ (1986). Istilahi ya Malezi. Dar-es-Salaam, Tanzania: Institute of Curriculum Development.

Ireton, H.R. (1987). Preschool development inventory. Minneapolis: Behaviour Science Systems.

Ireton, H. & Thwing, E. (1974). Manual for the Minnesota child development inventory. Minneapolis: Behaviour Science Systems.

Ireton, H. & Thwing, E. (1979). Manual for the preschool inventory. Minneapolis, MN: Behaviour Science Systems.

Ireton, H., Thwing, E. & Currier, S.K. (1977). Minnesota child development inventory: Identification of children with developmental disorders. Journal of Pediatric Psychology, 2: 18-22.

Ireton, H., LaBeck, L.J. & Lun, K.S. (1982). The Minnesota child development inventory: Ten years of research - state of the art. Minnesota: Behaviour Science Systems, Inc.

Ireton, H., Lun, Kin-Shing (1981). Minnesota prekindergarten inventory identification of children at risk for kindergarten failure. Psychology in Schools, 18: 394-401.

Istomina, Z.M. (1977). The development of voluntary memory in preschool-age children, pp. 100-159. In Cole, M. (ed.), Soviet developmental psychology. New York: M.E. Sharpe.

Johnson, F. (1974). A standard English Swahili Dictonary. Oxford University Press.

Khambalia, N. (1974). The incidence and causes of the deaf in Tanzania. Paper for Seminar of Commonwealth Society for the Deaf at the University of Sussex, Sept. 9-20, 1974.

King, K. & Myers, R. (1983). Preventing school failure: Relationship between pre-school and primary education. Ottawa: IDRC.

Kisanji, J.A.N. (1979). Incidence of handicapped children in ordinary primary schools. In Early childhood development and education. Dar-es-Salaam, Tanzania: UNICEF.

Kopp, C.B. (1983). Risk factors in development, pp. 1081-1088. In M.M. Haith & J.J. Campos (eds.), Handbook of child psychology: Infancy and developmental psychology, Vol. 2. New York: Wiley.

Kysela, G.M. & Marfo, K. (1984). Early handicapping conditions: detection and intervention in developing countries. In J.M. Berg (ed.), Perspectives and progress in mental retardation: Social, psychological and educational aspects, Vol. I. Baltimore: University Park Press.

Kysela, G.M., Mbise, A.S. & Mboya, M. (1989). Screening for disabilities in Tanzania. Paper presented at the International Conference on Partnership in Special Education. University of British Columbia, Vancouver, May, 1989.

Lazar, I. & Darlington, R. (1982). Lasting effects of early education: A report from the Consortium for Longitudinal Studies. Monographs of the Society for Research in Child Development, 47(2 & 3): #195.

Lechtenstein, R. & Ireton, H. (1984). Preschool screening: Identifying young children with developmental and educational problems. New York: Grune & Stratton, Inc.

Lefrancois, G.R. (1989). Of children: An introduction to child development. 6th ed. Belmont, Calif.: Wadsworth Publishing Company.

Liebeck, P. (1984). How children learn mathematics: A guide for parents and teachers. Penguin Books.

Luria, A.R. & Yurdovich, R. (1971). Speech and the development of mental processes in the child. Hammondworth, Eng.: Penguin.

Mahenge, S.T. (1979). Exploratory study of games and play materials in the Tanzanian child day care centres, pp. 113-122. In Early childhood development and education. Dar-es-Salaam, Tanzania: UNICEF Office.

Marfo, K. & Kysela, G.M. (1983). Rationale and strategies for early intervention with handicapped children in a development country. In K. Marfo, S. Walker & B. Charles (eds.), Education and rehabilitation of the disabled in Africa: Toward improved services, Vol. I. Edmonton: The University of Alberta, Centre for International Education and Development.

Marfo, K., Walker, S. & Bernard, C. (1986). Childhood disability in developing countries. New York: Praeger Special Studies.

Marjobanks, K. (1972). Environment, social class, and mental abilities. Journal of Educational Psychology, 43: 103-109.

Mbilinyi, D.A.S. (1984). Home processes that contribute to performance in reading and writing among Tanzanian primary school children. Unpublished M.A. dissertation, Department of Education, University of Dar-es-Salaam, Tanzania.

Mbise, A.S. (1986). The preschool child's social and intellectual development in Tanzania. Paper presented at the Department of Education Staff-Student Seminar, Dar-es-Salaam, August 1986.

__________ (1989). The changing perspective of child rearing in Tanzania: Implications for promoting the development of the child's perspective, pp. 51-62). In Jane Ross & Vangie Bergum (eds.), Through the looking glass: Children and health promotion. Ottawa: Canadian Public Health Association.

Mbise, A.S. & Kysela, G.M. (1989). Developing appropriate screening and assessment instruments: The case of Tanzania. Unpublished manuscript. University of Alberta, Canada.

Mbise, A.S., Mahenge, S.T. & Omari, I.M. (1984). Universal primary education: Some experiences from Tanzania, pp. 43-82. In Papers in education and development. Dar-es-Salaam, Tanzania: Department of Education.

McCall, R.R., Appelbaum, M.I. & Horgarty, P.S. (1973). Developmental changes in mental performance. Monographs of the Society for Research in Child Development, 38(3).

McLean, J.E. & McLean, L.K.S. (1978). A transactional approach to early language training. Ohio: Bell and Howell.

Ministry of Education, Ontario (1981). Manual for teachers of students with learning disabilities. Queen's Park, Ontario.

Ministry of Education, Tanzania (1978). MTUU: Its role in the reform of primary education in Tanzania, Vol. I. Dar-es-Salaam: Ministry of Education.

__________ (1984). Basic facts about education in Tanzania. Dar-es-Salaam: Government Printer.

__________ (1986). Preschool education policy proposal. Dar-es-Salaam, Tanzania.

Ministry of Social Welfare, Tanzania (1982). The Day Care Act. Dar-es-Salaam, Tanzania.

Moghaddam, F.M. & Taylor, D.M. (1986). What constitutes an "appropriate psychology" for the developing child? International Journal of Psychology, 21: 253-267.

Mpango wa Tanzania, UNESCO/UNICEF (MTUU)(1985). Evaluation of preschool education in Tanzania. Dar-es-Salaam, Tanzania.

MTUU (Mpango wa Tanzania/UNESCO/UNICEF)(1985). Ripota ya Tathumiri ya Myadi wa Elimu ya Awali. Dar-es-Salaam: MTUU - Idara ya Mafunzo ya Ualimu Tanzania, September, 1985.

Mwanjombe, R.Z. (1977). Universal primary education and the affiliated problems. Dar-es-Salaam: Tanzania Ministry of Education, MTUU Strengthening Program (mimeographed document).

Nchimbi, J.E. & Mbise, A.S. (1978). Problems facing blind students at Tabora School for the Blind. Unpublished research report, Department of Education, University of Dar-es-Salaam, Tanzania.

Neisworth, J.T. & Bagnato, S.J. (1987). The young exceptional child: Early development and education. New York: Collier, Macmillan.

Nyerere, J. (1967). Education for self reliance. Dar-es-Salaam: Government Printer.

Nyerere, J. (1974). Education for the liberation of man. Speech to the Dag Hammaskjold Seminar on Education, Dar-es-Salaam, Tanzania.

Nyinawumuntu, C. (1982). Some factors affecting performance in verbal meaning and picture recognition among standard I children in Tanzania. Unpublished M.A. dissertation, Department of Education, University of Dar-es-Salaam, Tanzania.

Omari, I.M. (1982). Psychology and education in a changing society. Dar-es-Salaam: University Press.

_________ (ed.) (1977). The young child in Tanzania: 0 to 7 years. Vol. I. Dar-es-Salaam: Tanzania Scientific Research Council.

Omari, I.M., Mbise, A.S., Mahenge, S.T., Malekela, G. & Besha, M.P. (1983). Universal primary education in Tanzania. Ottawa: International Development Research Centre.

Otto, W. & Smith, R.J. (1980). Corrective and remedial teaching. Boston: Houghton Mifflin Company.

Oyewole, A.I. (1984). Home and school: Effects of micro-ecology on children's educational achievement. In Curan, H.V. (ed.). Nigerian children: Developmental perspectives. London: Routledge & Kegan Paul, pp. 156-173.

Pederson, P. (1979). Non-western psychology: The search for alternatives, pp. 77-98. In A.J. Marsella, R.G. Tharp & T.J. Ciborowski (eds.). Perspectives on corss-cultural psychology. New York: Academic Press.

Pfannenstiel, J.C. & Seltzer, D.A (1985). Evaluation of report: New parents as teacher's project. Missouri Department of Elementary Education.

Piaget, J. (1952). The child's conception of number. London: routledge & Kegan Paul.

_________ (1959). Language and thought of the child, 3rd ed. London: Routledge & Kegan Paul.

_________ (1968). Six psychological studies. New York: Vintage Books.

Reber, A.S. (1988). Dictionary of psychology. Penguin Books.

Rogoff, B. & Gardner, W. (1984). Adult guidance of cognitive development. In Rogoff, B. and Lave, J. (eds.), Everyday cognition: Its development in social context. Cambridge, Mass.: Harvard University Press.

Rogoff, B. & Lave, J. (1984). Everyday cognition. Cambridge: Harvard University Press.

Rutter, M. & Madge, N. (1976). Cycles of disadvantage. London: Heinemann.

Salvia, J. & Ysseldyke, J.E. (1985). Assessment in special and remedial education. 3rd ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Sameroff, A. (1975). Transactional models in early social interactions. Human Development, 18: 65-79.

Saxe, G.B., Guberman, S.R. & Gearhart, M. (1987). Social processes in early number development. Monographs of the Society for Research in Child Development, 52(2): Serial No. 216.

Scarr, S., Weinberg, R.A. & Levine, A. (1986). Understanding development. New York: Harcourt Brace Jovanovich, Publishers.

Schneider, W. & Pressley, M. (1989). Memory development between 2 and 20. New York: Springer-Verlag.

Scribner, S. & Cole, M. (1981). The psychology of literacy. Cambridge, Mass.P: Harvard University Press.

Serpell, R. (1982). Measures of perception, skills and intelligence: The growth of a new perspective on children in a Third World country, pp. 392-441. In William W. Hartup, Inge M. Ahammer & Herbert L. Pick Jr. (eds.), Review of child development research, Vol. 6. Society for Research on Child Development.

__________ (1984). Childhood disability in socio-cultural context: Services and assessment summary. In D. Baine (ed.), Handicapped children in developing countries: Assessment, curriculum and instruction. Edmonton: University of Alberta Printing Services.

Siann, G. & Ugwuebu, D. (1988). Educational psychology in a changing world, 2nd ed. London: Unwin Hyman.

Siegfried, E. (1969). Preventing failure in the primary grades. California: Science Research Associate, Inc.

Siegler, R.S. (1986). Children thinking. Cambridge, Eng.: Cambridge University Press.

Sroufe, L.A. (1979a). The coherence of individual development: Early care, attachment and subsequent developmental issues. American Psychologist, 34: 834-841.

Stevenson, H.W., Parker, T., Wilkinson, A., Bonnevaux, B. & Gonzalez, M. (1978). Schooling, environment and cognitive development: A crosscultural study. *Monographs of the Society for Research in Child Development*, *43*(3): Serial No. 175.

Stragler, S.R., Huber, C.J. & Routh, D.K. (1980). *Screening growth and development of preschool children: A guide for test selection*. New York: McGraw Hill Book Company.

Sturner, R.A., Funk, S.G., Thomas, P.D. & James, A.G. (1982). An adaptation of the Minnesota child development inventory for preschool screening. *Journal of Pediatric Psychology*, *7*(3): 295-306.

Tamba, J. (1987). Mtoni educational assessment and resource centre. Annual Report of Activities (January to December, 1987, and personal discussion, October, 1988). Dar-es-Salaam: Tanzania.

Tanganyika African National Union (TANU)(1967). *Arusha Declaration*. Dar-es-Salaam: Government Printer.

7

__________ (1974). *The Musoma Resolutions*. Dar-es-Salaam, Tanzania: Government Printer.

Thain, W.S., Castro, G. & Peterson, A. (1980). *Normal and handicapped children*. Littleton, Mass.: PSG Publishing Company, Inc.

Thorndike, R.L., Hagen, E.P. and Sattler, J.M. (1986). *Stanford-Binet Intelligence Scale*. Riverside Publishing Company.

Troutman, A.P. & Lichtenberg, B.K. (1987). *Mathematics: A good beginning*. Monterey, Calif.: Brooks/Cole Publishing Company.

UNICEF (1979). *Early childhood development and education*. Nairobi, Kenya: UNICEF Eastern Africa Regional Office.

__________ (1985). *Hali ya Watoto Tanzania, 1985*. Dar-es-Salaam: Tanzania Publishing House.

United Republic of Tanzania & UNICEF (URT & UNICEF)(1985). *Analysis of the situation of children and women*. Vols. I and II. Dar-es-Salaam: Tanzania.

Walberg, H. & Marjoribanks, K. (1976). Family environment and cognitive development: Twelve analytic models. Review of Educational Research, 45: 517-552.

Wassao, M. (ed.)(1977). The young child study in Tanzania 0 to 7 years. Dar-es-Salaam: Tanzania Scientific Research Council.

Werner, E.E. (1979). Cross-cultural child development. Monterey, Calif.: Brooks/Cole Publishing Company.

Westling, D.L. (1986). Introduction to mental retardation. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

White, B.L. (1975). The first three years of life. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Whiting, B.B. & Edwards, C.P. (1988). Children of different worlds. Cambridge, Mass.: Harvard University Press.

WHO (1986). Protocols for the development and field testing of techniques for monitoring physical growth and psychological development. World Health Organization, Division of Family Health and Division of Mental Health, Geneva, Switzerland (WHO/MCH/MNT/86.1).

Wiersma, W. (1986). Research methods in education: An introduction. 4th ed. London: Allyn and Bacon, Inc.

Winzer, M., Rogow, S. & Charlotte, David (1987). Special education in Canada. Prentice-Hall, Canada.

APPENDIX A

THE MINNESOTA PRESCHOOL INVENTORY

Appendix A

THE MINNESOTA PRESCHOOL INVENTORY

UTARATIBU WA MAKUZI YA WATOTO KABLA YA UMRI WA KUANZA SHULE.

Harold Ireton, Ph.D, & Edward Thwing, Ph.D, (1974).

(Translated into Kiswahili language by Akundaeli S. Mbise, Faculty of Education, University of Dar es Salaam, Tanzania.)

Maelezo kwa kina mama.

Uchunguzi wako kuhusu kukua kwa mtoto wako utasaidia sana kuelewa maendeleo ya ajinsi anavyokua na kujirekebisha kimatendo na kitabia. Maswali yafuatayo yameandaliwa kwa madhumuni ya kukusanya habari hizo za maendeleo ya kukua kwa mtoto wako.

Muda mfupi ujao utashiriki katika kujibu maswali haya. Tafadhali ukumbuke kwamba usahihi wa majibu yako utatoa picha kamili/sahihi ya maendeleo ya kukua kwa mwanao na anavyobadilika tabia na matendo yake.

Maelekezo.

Kwanza andika jina la mtoto wako katika visanduku juu ya karatasi ya majibu. Anza na jina la ukoo, halafu acha kisanduku kimoja wazi na uandike jina la kwanza (alilopewa na wazazi au la ubatizo) . Onyesha kama mtoto wako ni wa kiume au wa kike kwa kujaza kisanduku kilicho sahihi. Halafu jaza tarehe ya kuzaliwa mwanao. Endelea na kujaza tarehe uliyojibu maswali haya.Mwisho kabisa tafadhali ujaze habari za familia ya mtoto mwisho wa maswali.

Kijitabu hiki kina maelezo yanayohusu tabia/mwenendo wa watoto. Maelezo haya yanahusu mambo watoto wanayofanya kwa jinsi wanavyokua. Soma maelezo haya kwa uangalifu. Kama yanakubaliana na mwenendo wa mtoto wako, jibu NDIYO

Kama maelezo hayo hayakubaliani na mwenendo wa mwanao, jibu HAPANA

Jibu NDIYO au HAPANA kutokana na mambo uliyoshuhudia mwanao akitenda, siyo mambo unayofikiria anaweza kufanya. Jibu NDIYO kwa kutia alama ya (V) chini ya NDIYO au HAPANA.

Tafadhali uhakikishe namba ya swali unalojibu inakubaliana na ile iliyopo kwenye kijitabu cha majibu. Kama ukitaka kubadili jibu lolote hakikisha umefuta kabisa jibu la awali (kwanza).

Ndiyo/Hapana

1. Mtoto anavuka barabara mwenyewe.
2. Hunawa uso bila kusaidiwa.
3. Hujiwekea kinywaji kwenye bilauri.
4. Anavaa na kuvua nguo bila kusaidiwa.
5. Huvaa viatu kwenye miguu sahihi.
6. Hutembelea watoto wa jirani mwenyewe.
7. Hutumia kisu kukatia vitu (matunda, vijiti n.k.).
8. Hutembelea majirani bila kuelekezwa na mtu mzima.
9. Hutumia kisu cha mezani kukatia vitu.
10. Hujiandaa kwenda kulala bila msaada.
11. Huvaa mabuti(viatu) bila kusaidiwa
12. Huoga bila kusaidiwa
13. Hutumia fedha kununua vitu (mkate, pipi, matunda).
14. Huenda chooni bila msaada.
15. Huangalia pande zote anapovuka barabara/njia.
16. Hutoa mwongozo kwa watoto wengine.
17. Hupiga mswaki bila kusaidiwa.
18. Huchana nywele vizuri bila kusaidiwa.
19. Hufunga kimoja au zaidi(kwa usahihi).
20. Hufunga kamba za viatu bila kusaidiwa.
21. Hufunga vifungo vya shati (Blausi au koti) kwa kutia vifungo vyote kwenye matundu sahihi.
22. Anaandika namba 1 hadi 9.
23. Hukumbuka na kuandika maneno mawili au zaidi kutoka kichani.
24. Hupaka rangi kufuatana na mistari iliyopo kwenye sakafu au kitabu cha kuchorea.
25. Huandika jina lake la kwanza.
26. Huchora picha zinazotambulika.
27. Huchora picha zenye zaidi ya kitu kimoja kama nyumba na miti, mtu na mbwa, mbuzi na kuku.
28. Huchora au kunakili picha za mviringo/mduara.
29. Hukata vitu kwa kutumia mkasi akifuata mstari uliochorwa.
30. Huchora picha ya mwanaume au mwanamke ikionyesha sehemu sita, kwa mfano, kichwa, mwili (kifua), mikono, miguu, pua, midomo, viganja, nyayo, nywele na masikio.
31. Huchora au kunakili msalaba au alama ya kujumlisha.

32. Hukata karatasi au jani kutoka upande mmoja mpaka mwingine akitumia mkasi au kisu.
33. Huchora au kunakili mraba.
34. Huandika maneno kadhaa kutoka kitabuni /ubaoni.
35. Huchora picha ya mwanaume au mwanamke akionyesha sehemu tatu, kama kichwa, mikono, miguu, macho, pua, mdomo.
36. Huuliza maswali yanayoanza na 'kwa nini?'
37. Hueleza yale anayoota usiku.
38. Huimba wimbo mfupi au kusema shairi dogo.
39. Huongea vizuri kwa kueleweka.
40. Hujieleza kwa kutumia sentensi kama: "Kama mvua itanyesha.......basi nitafanya....." au "Nikiwa mkubwa............"
41. Hutumia na kutoa maneno ya utani au mafumbo kama vitendawili.
42. Hutumia wingi kwa usahihi (Kama: mtu.....watu, mti...miti, nyumba...nyumba)
43. Huuliza maswali yaanzayo, "Lini uta.........."
44. Hutumia sentensi zionyeshazo wakati uliopita: Mfano, "Jana mtu alikwenda.." badala ya "Mtu atakwenda jana.." , "Paka alikula panya", "Paka atakula panya jana.."
45. Husimulia mambo yaliyotokea siku mbili au tatu zilizopita
46. Huuliza maswali yaanzayo na "Nani......"
47. Huunganisha sentensi mbili kwa kutumia neno 'na', 'au', au 'lakini'.
48. Hueleza kitu anachotaka kuchora kabla hajachora.
49. Anauliza maswali yaanzayo na "Jinsi ya/ njia za kufanya vitu...."
50. Hukumbuka mambo yaliyopita, husema mambo kama: "Unakumbuka siku ile...."
51. Huimba nyimbo fupifupi ....(Zipi? Zitaje)
52. Hutaja jina na kuelezea picha anazochora.
53. Hutumia wingi wa maneno kama 'sisi,' 'ninyi', 'wao,' kwa usahihi.
54. Hueleza jinsi vitu vilivyotengenezwa.
55. Huhesabu vitu vitatu au zaidi.
56. Anapoeleza vitu, huelezea makundi yake kama, punda, ng'ombe ni wanyama, chungwa, embe ni tunda, n.k.
57. Hucheza michezo michache ya nyumbani kama vile, karata, kupanga vitu, n.k.
58. Anapoelezea kitu hueleza na tabia zake, kama, 'ngombe wana mkia, mpira ni wa duara/mviringo, anga ni la buluu, n.k.
59. Anataja jina lake la kwanza anapoulizwa jina lake.
60. Anahesabu mpaka 10.
61. Anaelewa maana ya: mapema na baadaye, wahi, na chehewa.

62. Anacheza michezo ya mezani kwa kutumia kadi, kama vile......
63. Husema alfabeti kwa utaratibu wake.
64. Anajua dakika ni fupi kuliko saa.
65. Huuliza maana ya maneno.
66. Hueleza anapoishi, mtaa na nyumba anapoulizwa.
67. Hutambua sauti ni kubwa au ndogo.
68. Huzungumzia na kuuliza juu ya kifo.
69. Anajua mkono mmoja una vidole vingapi.
70. Anatambua na kutaja herufi tano kubwa za alfabeti.
71. Anatambua mkono wa kulia na wa kushoto.
72. Hutambua rangi moja kwa usahihi.
73. Hutumia maneno, 'mbio/haraka', 'polepole', kwa usahihi.
74. Anajua maana ya 'sawa' na 'tofauti', fanana na tofauti.
75. Hutaja mji au kijiji chake akiulizwa.
76. Anajua maana ya 'nusu'.
77. Anatambua 'nyekundu, kijani, njano, buluu, kwa majina yake.
78. Huonyesha au kutaja kitu kilicho kikubwa kati vitu viwili akiulizwa.
79. Anajua maana ya 'kwanza', na 'mwisho', 'kati', na 'pili', na anafuata maelekezo kutokana na maneno haya.
80. Hutaja siku za juma kwa usahihi.
81. Hutumia maneno, 'leo', 'jana', na 'kesho' kwa usahihi.
82. Hutofautisha mzee na kijana.
83. Huongea au kuonyesha mchezo wa kupigana au ugomvi, kuua na kuuawa.
84. Anatofautisha vitu virefu kuliko vingine.
85. Anatambua na kutaja herufi za alfabeti.
86. Anasoma maneno 4 au zaidi.
87. Anajua bei za vitu vichache kama pipi, biskuti, mikate, bisi, n.k.

Maelezo yafuatayo yanaonyesha tabia ambazo zinaweza kuhusiana na zile, unazoona kwa mtoto wako. Hizi tabia zinaweza kuonyesha matatizo ya kukua kwake kimwili au kimaono (feelings, emotional). HAta hivyo vifungu vingi havitafanana na tabia za mwanao. Vingine vitafanana. Hata kama vingine havitafanana, ni vizuri kuelewa kuwa matatizo haya yakitambuliwa mapema, itawezekana kumsaidia mtoto kukua kwa ufanisi zaidi na kumwezesha kuyashinda matatizo yanayoathiri uwezo wake. Tafadhali jibu maswali yafuatayo kama ulivyofanya katika sehemu iliyotangulia.

88. Mtoto huonyesha usahaulifu, na huhitaji kukumbushwa kutimiza wajibu wake mara kwa mara.
89. Hupendelea kucheza na watoto wadogo kuliko yeye mwenyewe.

90. Huchukua muda kuelewa mambo/maelekezo au kuonyesha kuchanganyikiwa.
91. Haelewi maana ya wakati, (leo, jana, kesho) ,huchelewa mara kwa mara akitumwa mahali.
92. Hana mpango wa vitu, (k.m, vitabu au vifaa vya michezo).
93. Hajifurahishi, mara kwa mara hupendelea kujiuliza 'nifanye nini sasa?, au, ninaweza kufanya nini sasa?'
94. Huwa ana tatizo la kujihudumia anapojisaidia.
95. Hucheza michezo ya mezani, kama karata.
96. Huonyesha wasiwasi mara kwa mara.
97. Hapendi kujitokeza au kufanya jambo mwenyewe.
98. Hutawaliwa na wenzake kwa urahisi, hajitetei au kutetea haki zake akionewa.
99. Huchukuliwa kwenda kucheza na wenzake mara kwa mara.
100. Hatulii, kila mara yupo anafanya kila kitu (vishughuli vingi).
101. Hasikilizi kwa makini, huvutiwa na vitu vingine.
102. Hamalizi kazi au vitu anavyofanya.
103. Huchezacheza sana bila kutulia na kukaa kimya.
104. Mwongeaji sana kama kengele, hanyamazi hata wakati mmoja.
105. Ni mwepesi wa kusisimka au kuhamakika (excitable).
106. Huonyesha harara (impulsive) hufanya mambo bila kufikiria.
107. Hukata tamaa upesi na wakati mwingine huwa anakasirika.
108. Hafuati zamu yake katika mchezo au kufuata sheria katika mchezo au shughuli za vikundi.
109. Huonyesha uzembe au kutojali, hivyo hugongana na wengine asipoangaliwa.
110. Sio mtiifu, hajali sana.
111. Mara nyingi hupenda kutegemea watu wengine na/au kuwatumia kwa manufaa yake.
112. Huona kama anadhulumiwa (abused) , hivyo hupenda kulipiza kisasi na kuwaadhibu wenzake.
113. Ni mgomvi, mwasi, mpenda ukorofi.
114. Ni mtumia nguvu, mpiga makelele.
115. Hupigana mara nyingi.
116. Hujifanya bwana mkubwa na husisitiza kuwa yeye ni wa kwanza au mstari wa mbele kila wakati.
117. Hukasirika au kununa mara kwa mara.
118. Hupenda kasikilizwa na kusifiwa mara kwa mara.
119. Ana vurugu nyumbani na katika ujirani.
120. Huonyesha hasira mara kwa mara.
121. Ana tabia ya udokozi au wizi wa vitu vya wenzake.
122. Hajali watu wengine wanavyojisikia. Hajali hisia za wenzake.
123. Husema uongo.

124. Huharibu vifaa kwa makusudi wakati mwingine.
125. Anatukana na kutumia lugha mbaya.
126. Anapotenganishwa na mama yake hulia.
127. Anaomba kusaidiwa kufanya vitu ambavyo anaweza kufanya mwenyewe. Husema 'siwezi' 'nisaidie', au 'fanya mwenyewe', 'wewe ufanye'.........
128. Hulia sana.
129. Hupendelea kukaa mwenyewe, hukwepa watu.
130. Huona aibu, soni au woga.
131. Huonyesha wasiwasi, huona mashaka na kutetemeka mara nyingine (akiulizwa vitu/makosa..)
132. Haonyesha furaha mara nyingi wala hacheki.
133. Hujiona mdogo, husema yeye hajui au husema ni mmbaya.
134. Anajihisi sana, huudhika kwa urahisi, havumilii kukosolewa au kusahihishwa.
135. Hucheza na wengine kwa nadra, hana marafiki wa karibu/ndani.
136. Huwa mzembe mzembe, hujikwaa anapokimbia au huangauka.
137. Hapendi michezo ya viungo kama kuruka kamba, kudaka vitu.
138. Ni mzito wa kufanya vitu vya mikono.
139. Huchora na kupaka rangi vibaya, kufinyanga vibaya.
140. Huongea kwa maneno machache (kama 5 tu).
141. Huwa ana kigugumizi au anaongea kwa kusitasita.
142. Ana tatizo la kueleza mawazo yake, k.m, kuyachanganya.
143. Kuna ugumu wa kumwelewa anapoongea.
144. Hutumia lugha ya kitoto mara kwa mara.
145. Hulalamika uchovu, huonekana mzito, asiye na nguvu/ukakamavu.
146. Halali usingizi wa kutosha/mzuri, hatulii, huwa ana ndoto mbaya.
147. Hali vizuri-hula kidogo tu, au hula sana.
148. Hulalamika kuumwa kichwa au kuwa na maumivu ya tumbo au kichwa.
149. Haoni vizuri/ana matatizo ya kuona vitu sawasawa.
150. Ana matatizo ya kuona vizuri.

APPENDIX B

HOME OBSERVATION FOR MEASUREMENT OF THE ENVIRONMENT

HOME OBSERVATION FOR MEASUREMENT OF THE ENVIRONMENT

KIPIMIO CHA MAZINGIRA YA NYUMBANI KWA WATOTO

By Betty Caldwell and Robert H. Bradley (1979)

(Translated into Kiswahili language by Akundaeli S. Mbise Faculty of Education, University of Dar es Salaam, Tanzania).

Tafadhali tia alama ya (v) mbele ya kila usemi kuonyesha vitu vinavyopatikana au visivyopatikana nyumbani. Tafadhali eleza kikamilifu vitu halisi vilivyopo nyumbani ili kuthibitisha kila usemi.

1. *Vichocheo Vinavyohusiana na Vitu vya Kuchezea, Michezo, na Vifaa vya Kusoma.*

1. Kuna vifaa/vitu vinavyomsaidia mtoto kujua rangi ya vitu, ukubwa na sura katika mazingira.
2. Mtoto anajua vitendawili vitatu au zaidi
3. Kuna santuri na sahani za mafunzo ya watoto.
4. Kuna vifaa au michezo inayoruhusu kujieleza kwa michoro kwenye karatasi au kupaka rangi. Kalamu na karatasi za kuchorea zinapatikana.
5. Kuna vifaa au michezo inayohitaji uadili wa vitendo kama kupaka rangi kwa mpango/hatua, michoro kwenye karatasi, kupaka picha rangi.
6. Vifaa au michezo inayosaidia kujifunza namba, vitabu venye namba (hesabu), michezo yenye namba.
7. Vitabu vya watoto vinapatikana nyumbani.
8. Vitabu 10 au zaidi vipo nyumbani.
9. Familia hununua gazeti kila siku na kulisoma.
10. Familia hulipia gazeti moja (kila wakati).
11. Mtoto anahimizwa kujifunza sura za vitu.

2. *Vichocheo vya Kukuza Lugha.*

12. Vitu/vifaa vinavyofundisha juu ya wanyama, vitabu picha za wanyama, michezo na mafumbo ya wanyama.
13. Mtoto anahimizwa kujifunza juu ya alfabeti.
14. Mzazi anamfundisha mtoto tabia za kila siku kama kusema, 'asante', 'naomba', 'nisamehe'.
15. Mama anatamka neno kwa sahihi na kutumia sarufi safi.

16. Mzazi anamshawishi mtoto kujieleza au anamsikiliza mtoto anapoeleza jambo.
17. Mama anapomweleza mtoto jambo, hutumia sauti ya kutia nia au kumhimiza.
18. Mtoto anapewa uchaguzi wa kueleza chakula atakacho wakati wa asubuhi au mchana.

Jumla

3. *Mazingira Yamzungukayo Mtoto. Usalama. Usafi na Yanavyofaa kwa Makuzi..*

19. Majengo hayana sehemu zinazohatarisha usalama na afya ya watoto (Kama ngazi, rangi, vyuma, misumari, n.k.).
20. Mazingira/viwanja vya michezo ya nje vina usalama. (Hakuna sehemu ambazo watoto wanakatazwa kuchezea.)
21. Ndani ya nyumba hakuna giza au sehemu ambazo mtoto ataogopa au kukinai.
22. Mazingira ya jirani yana miti, majani, ndege na yanapendeza.
23. Kuna nafasi kubwa ya kutosha kwa kila mkazi wa nyumba (anayeishi katika familia ya mtoto).
24. Nafasi inayopatikana nyumbani haikusongwa na fenicha.
25. Vyumba vyote vinavyoonekana katika nyumba ni safi na havina makelele.

Jumla

4. *KUJIAMINI (pride). UPENDO (Affection). UKARIMU (warmth).*

26. Mzazi anashirikiana na mtoto kwa dakika 15 kwa siku, wakati wa kusikiliza radio, kula, masimulizi ya hadithi au wakati wa ugeni.
27. Mama anaongea na mtoto mara mbili au zaidi wakati wa ugeni(wa mtafiti). Karipio au maelezo ya mashaka hayahesabiwi.
28. Mama huyajibu naswali ya mtoto au anayauliza kwa lugha nzuri (maneno mazuri).
29. Mama huyajibu mazungumzo ya mtoto kwa maneno.
30. Mama anasifia tabia ya mtoto au anamsifu mtoto mwenyewe mara mbili wakati wa ugeni (mtafiti).
31. Mama anamkumbatia au kumbembeleza mtoto mara moja wakati wa ugeni.)Mtafiti).
32. Mama anafanya mambo yanayomruhusu' mtoto kuonyesha yale anayojua/anayoweza kufanya.

Jumla

5. *Vichocheo vya Kukuza Elimu.*

33. Mtoto anahimizwa kujifunza rangi mbalimbali.
34. Mtoto anahimizwa kujifunza maongezi yenye utaratibu kama sala, nyimbo, masimulizi, mashairi.
35. Mtoto anahimizwa kujifunza uhusiano wa vitu na nafasi zake, kama vile juu, chini, kubwa, ndogo.
36. Mtoto anahimizwa kujifunza namba.
37. Mtoto anahimizwa kusoma maneno machache.

Jumla

6. *Mifano/Vielelezo vya Kumkomaza Mtoto Katika Utu Mwena*

38. Mtoto anafundishwa subira wakati wa kula. Tabia ya kulia lia au kulalamika inapuuzwa kwa muda wa nusu saa.
39. Familia ina radio/TV inayotumika wakati maalumu tu. Haifunguliwi wakati wote.
40. Mama anamtambulisha mtafiti(mhojaji) kwa mtoto.
41. Mtoto anao uhuru wa kueleza mambo asiyoyapenda bila kuadhibiwa/kukaripiwa.
42. Mtoto haadhibiwi kwa kumpiga mama anapokataa kutimiza matakwa ya mtoto.

Jumla

7. *Aina Mbalimbali za Vichocheo*

43. Vyombo vya muziki vinapatikana nyumbani.
44. Wakubwa katika familia wanatembea/tembeza mtoto (kwa marafiki, dukani, bustani,) kama mara moja kwa juma.
45. Wakubwa katika familia husafiri na mtoto zaidi ya umbali wa maili 50 kutoka nyumbani (rejea safarizilizofanyika mwaka jana).
46. Mtoto alipelekwa kwenye maonyesho ya kisayansi, kilimo, viwanda, jumba la sanaa, makumbusho ya kihistoria) mwaka jana.
47. Mtoto huvirudisha vifaa vyake vya michezo mahali pake bila kusaidiwa.
48. Mama hutumia sentensi ndefu na maneno marefu katika kuongea na mtoto.

49. Kazi za mtoto anazotengeneza/chora hubandikwa kwenye kuta za nyumba yao.
50. Mtoto hupata nafasi ya kula mlo mmoja akiwa na mama mara moja kwa siku.
51. Mzazi humruhusu mtoto kuchagua chakula au mboga anazopenda.

Jumla.

8. *Adhabu*

52. Mama hamgombezi au kumkemea mtoto zaidi ya mara mbili wakati wa ugeni wa mtafiti.
53. Mama hamuamrishi mtoto kutulia au kumzuia kwa kumkamata kwa nguvu wakati wa ugeni.
54. Mama hampigi mtoto kofi au kumfinya wakati akiwepo mgeni (mtafiti).
55. Mama ameeleza kuwa mtoto hakuadhibiwa zaidi ya mara moja juma lililopita.

APPENDIX C

PICTURE VOCABULARY

Appendix C

MSAMIATI KATIKA PICHA
(PICTURE VOCABULARY)

1. Gari (car) motokaa, teksi
2. Kitabu (book)
3. Ua (flower)
4. Saa (clock, watch)
5. Sungura (rabbit, hare)
6. Mkasi (scissors)
7. Nyundo (hammer)
8. Bendera (flag)
9. Bundi (owl)
10. Fimbo (gongo) (bat)
11. Koleo, sepeto, beleshi, (shovel, spade)
12. Barabara, mtaa mjini, Njia Kuu, (road, street, Highway)
13. Daraja la gari, treni (Road bridge, railway bridge)
14. Kondoo, mwanakondoo, mtoto wa kondoo (Sheep, lamb, baby sheep)

APPENDIX D

QUANTITATIVE REASONING

Appendix D

DHANA ZA KIHESABU (QUANTITATIVE REASONING)

Nataka tujifunze kucheza mchezo wa kuhesabu. Tutaanza kwanza kwa kuhesabu vidole vya mkono na miguu.

1.Nihesabie vidole vya mikono. Hesabu vidole vya miguu.
2. Sasa tutajifunza mchezo wa dadu. Dadu ina nyuso sita. Kila uso una macho kadhaa.
3. Hebu tuangalie jinsi ya kucheza mchezo wa dadu. Angalia ninavyoiweka dadu yangu na wewe uweke yako kulingana na macho unayoyaona juu yake. Mimi nitaweka dadu yangu kwenye kisahani hiki nawe uweke yako hivyohivyo..
4. Zoezi 1. Uso wenye 1 (face with 1)
    Zoezi 2. Uso wenye 6 (face with 6)
    Zoezi 3. Uso wenye 3 (face with 3)
    Zoezi 4. Uso wenye 2 (face with 2)
    Zoezi 5. Uso wenye 5 (face with 5)
    Zoezi 6. Uso wenye 2 na 1 (face 2,1)
    Zoezi 7. Uso wenye 5 na 2 (face 5,2)
    Zoezi 8. Uso wenye 6, na 4 (faces with 3)
    Zoezi 9. Uso wenye 1-1-1 (face 3)
    Zoezi 10. Uso wenye 2-4-3 (a face for total)
    Zoezi 11. Uso wenye 2-4 (a face for total)
    Zoezi 12. Uso wenye 1-2-3-4 (why the arrangement?)

APPENDIX E

MEMORY TEST

Mazoezi ya Kumbukumbu (Memory test)

Vifaa.

Sinia ndogo au sahani kubwa. Shanga za rangi nyekundu, buluu, na nyeupe. Sura za shanga: Sura ya kisahani, sura ya mtungi au dodoki, sura ya mviringo, na sura ya pia. Picha yenye shanga inayoonyesha rangi na sura zake. Fimbo, mnyororo, (mlingoti) au uzi wa katani (kamba nyembamba).

Maelezo kwa mwalimu:

1. Tafadhali hakikisha kila mtoto anaelewa rangi na sura za kila ushanga .
2. Fanya mazoezi na watoto wakutajie vitu mbalimbali vyenye rangi tatu zinazohusika.

3. Jaribu kuwaelekeza watoto katika kutaja vyombo vyenye sura mbalimbali zinazofanana na hizo zilizotajwa .
4. Jaribu mafunzo ya kikundi cha watoto wa miaka mitano kwanza, halafu uendelee na miaka sita.
5. Ikilazimika, endelea na mazoezi ya binafsi kabla ya kuanza jaribio. Hasa kwa wale watoto watakaoonekana na dalili za matatizo wakati mazoezi ya kikundi.
6. Baada ya kuhakikisha watoto wote wameelewa rangi na sura jizo, anza kuendesha jaribio kwa mtoto mmoja mmoja mahali palipo kimya. Fuata maelezo yafuatayo.

Mwalimu na mtoto:
Mwalimu anaanza kwa kusema:

> **Sasa nitageuza (pindua) picha hizi zinazoonyesha shanga. Halafu nitakuonyesha ushanga mmoja. Baada ya kukuonyesha ushanga huo, nitauondoa. Nitageuza tena picha hizi ili unionyeshe ushanga unaofanana na ule uliouona.**

Kwa mazoezi yaliyohusu utambuzi wa ushangammoja mmoja, picha ya shanga iligeuzwa uso chini ili mtoto asione picha wakati anaonyeshwa ushanga. Ushanga uliohusika ulishikiliwa kwenye kiganja wazi ili mtoto auone vizuri. Ushanga huo ulionyeshwa kwa sekundi tatu. Mwalimu alifunga kiganja na kuonyesha picha, akimwambia mtoto aonyeshe picha ya ushanga alioona.

Zoezi la ushanga mmoja mmoja.

Utaratibu uliofuatwa katika zoezi la ushanga mmoja mmoja ni kuonyesha ushanga wenye rangi na sura zifuatazo.

(1) Ushanga sura ya kisahani-buluu;
(2) Sura ya mviringo-nyeupe;
(3) Sura ya mviringo-nyekundu;
(4) Sura ya dodoki/mtungi-nyekundu;
(5) Sura ya pia-nyeupe.

Zoezi la shanga mbilimbili.

Mazoezi haya pia yalifuata utaratibu uliotajwa hapo juu- wa kuonyesha picha ya shanga mbalimbalina halafu kugeuza picha hizo uso chini wakati wa mazoezi.
Mwalimu akaanza kwa kueleza:
"Sasa nitakuonyesha picha ya shanga 2. Uziangalie kwa makini kwa sababu nitaziondoa. Halafu nitakuonyesha picha tena ili utambue shanga zinazofanana na ulizoona. Je, uko tayari?"

Picha za shanga ziligeuzwa uso chini ili mtoto asizione wakati anaonyeshwa shanga halisi. Shanga mbili zilipangwa mezani mbele ya mtoto, zikaachwa kwa sekunde 4. Baada ya sekunde 4 shanga hizo ziliondolewa na mtoto akaambiwa aonyeshe shanga zilizofanana katika picha. Mazoezi yalifuata utaratibu ufuatao.

6. Shanga nyekundu -mviringo na buluu-mviringo.
7. Shanga mviringo-nyeupe na sahani-nyeupe.
8. Shanga pia-buluu na dodoki/mtungi buluu.
9, Shanga Kisahani-nyekundu na mviringo-nyeupe.
10. Shanga dodoki/mtungi-buluu na pia-nyekundu.

Kutunga shanga

Watoto walifanya mazoezi ya kutunga shanga kwenye kamba ya katani kwanza kuthibitisha wanaweza kufanya zoezi hilo. Zoezi hasa lilihusu kutunga shanga kwenye mlingoti wa fimbo nyembamba. Mlingoti huu ulikuwa umechomekwa kwenye kisanduku chenye shanga mbele ya mtoto. Mtoto alionyeshwa picha za shanga zilizotungwa tayari kwa muda wa sekunde tano. Mtoto alitajiwa sura na rangi za shanga hizo. Sura na rangi hizo zilikaririwa tena kwa marudio.

> Tafadhali angalia shanga hizi kwa makini. Kuna rangi tatu: nyekundu, nyeupe na buluu (kila rangi ikionyeshwa kwa kidole). Pia kuna sura nne. Nyingine ni za mviringo kama hii (aonyeshwa ushanga wa mviringo), nyingine ni ndefu, kama hii (aonyeshwa sura ya dodoki/mtungi), nyingine ni nyembamba upande mmoja na pana upande mwingine (aonyeshwa sura ya pia), na nyingine ni bapa na mviringo kama hii (aonyeshwa sura ya kisahani).

Mwalimu akaendelea:

> Sasa nitakuonyesha shanga zilizotungwa kwenye mlingoti kama hizi unazoona (anaonyesha picha ya mlingoti wenye ushanga) Halafu nitaondoa picha. Wewe utafunga shanga zako kama zile ulizoona kwenye picha. Halafu tufanye mazoezi pamoja.

Picha ziligeuzwa uso chini ili mtoto asizione. Ndipo mtoto akaambiwa atunge ushanga wenye shanga nyeupe mbili za mviringo. Mtoto alipokosea alionyeshwa picha aige. Baada ya kuelewa kwa wale watoto walionekana kuwa na matatizo na mazoezi ya awali, jaribio liliendeshwa kwa utaratibu ufuatao:

11. Sura ya dodoki/mtungi-rangi_nyeupe na pia-nyeupe;
12. Sura ya mvirongo-nyekundu na mviringo-buluu;
13. Sura ya sahani-nyekundu na sahani-nyeupe;
14. Sura ya mviringo-buluu, mviringo-nyeupe na mviringo-nyekundu.
15. Sura ya dodoki/mtungi-nyekundu, dodoki/mtungi-nyeupe na dodoki/mtungi-nyekundu.
16. Sura ya sahani-nyeupe, dodoki/mtungi-nyeupe na sahani-nyeupe.
17. Sura ya dodoki-buluu, mviringo/myeupe miwili na dodoki/mtungi-buluu.
18. Sura ya pia-buluu na mviringo-nyeupe.
19. Sura ya sahani-nyekundu, dodoki/mtungi-nyekundu na mviringo-nyekundu.
20. Sura ya mviringo-buluu, sahani-buluu, na mviringo-nyeupe na sahani- nyeupe.

APPENDIX F

UJUZI WA WAZAZI KUHUSU MAKUZI YA WATOTO

Appendix F

UJUZI WA WAZAZI KUHUSU MAKUZI YA WATOTO

1. Nieleze mtoto wako navyoitumia siku yake tangu anapoamka mpaka anapokwenda kulala usiku. (Jumamosi, Jumapili, au siku ya sikukuu.)

2. Elezea jinsi unavyowapangia kazi watoto . Unaanza kuwapangia wakiwa na umri gani? Kuna tofauti kati ya kazi ya wavulana na wasichana? Kwa nini?

3. Elezea kazi wanazofanya bila wewe kuwapangia.

4. Eleza jinsi unavyowafundisha watoto kujitegemea katika huduma ndogondogo kama kuvaa, kunawa, kuoga, n.k.

5. Nieleze vifaa vinavyopatikana nyumbani kwako vya kuwasaidia watoto kukua

a) Kijamii- kujua maadili na utaratibu wa unaokubalika katika jamii.
b) Kiakili-kuongeza maarifa na uwezo wa kutatua matatizo
c) Kimatendo-kutumia viungo mbalimbali
d) Kihisia-kujitawala nafsi (self control).
e) Kielimu-kusoma, kuandika, kuhesabu.
f) Kimichezo-Vifaa vya michezo mbalimbali.

6. Nieleze juu ya tabia unazopenda na usizopenda watoto wasijifunze. Unawasaidiaje kujifunza tabia nzuri? Unawazuiaje wasijifunze tabia mbaya?
7. Nieleze juu ya adhabu unazowapa watoto wako. Mabadiliko gani yanatokea katika tabia.
8. Tafadhli nieleze nyakati na shughuli ambazo unashirikiana na watoto.

9. Maarifa ya vitu mbalimbali na lugha ya watoto wako - mnavisaidiaje kukua.